III. Affected Environment

A. Introduction

A study area encompassing the range of reasonable alternatives in Maine was examined through detailed studies of natural resources, socioeconomics, transportation, air quality, noise, and cultural resources.

B. Physical and Biological Environment

1. Physical Geography, Soils, and Geology

a. Physical Geography

The Study Area has a hilly topography, and slightly rocky coastline along the coastal portion of the St. Croix River. Elevations within the Study Area generally range between 15.2 and 121.9 m (50 and 400 ft.) above sea level.

The Study Area lies within the Coastal Division climatological division, which is tempered by the Atlantic Ocean. Peak summer temperatures average 21.1° C (70° F) statewide, but can reach 32.1° C (90° F). Winters within the Coastal Division experience 10 to 20 days of sub-zero temperatures (Maine Tourism Association 2001).

The average annual precipitation in the Coastal Division is 1.17m (46 in.), and heavy fogs can occur. The average annual snowfall in the Coastal Division is between 1.27 and 1.78 m (50 to 70 in.) (Maine Tourism Association 2001).

b. Soils

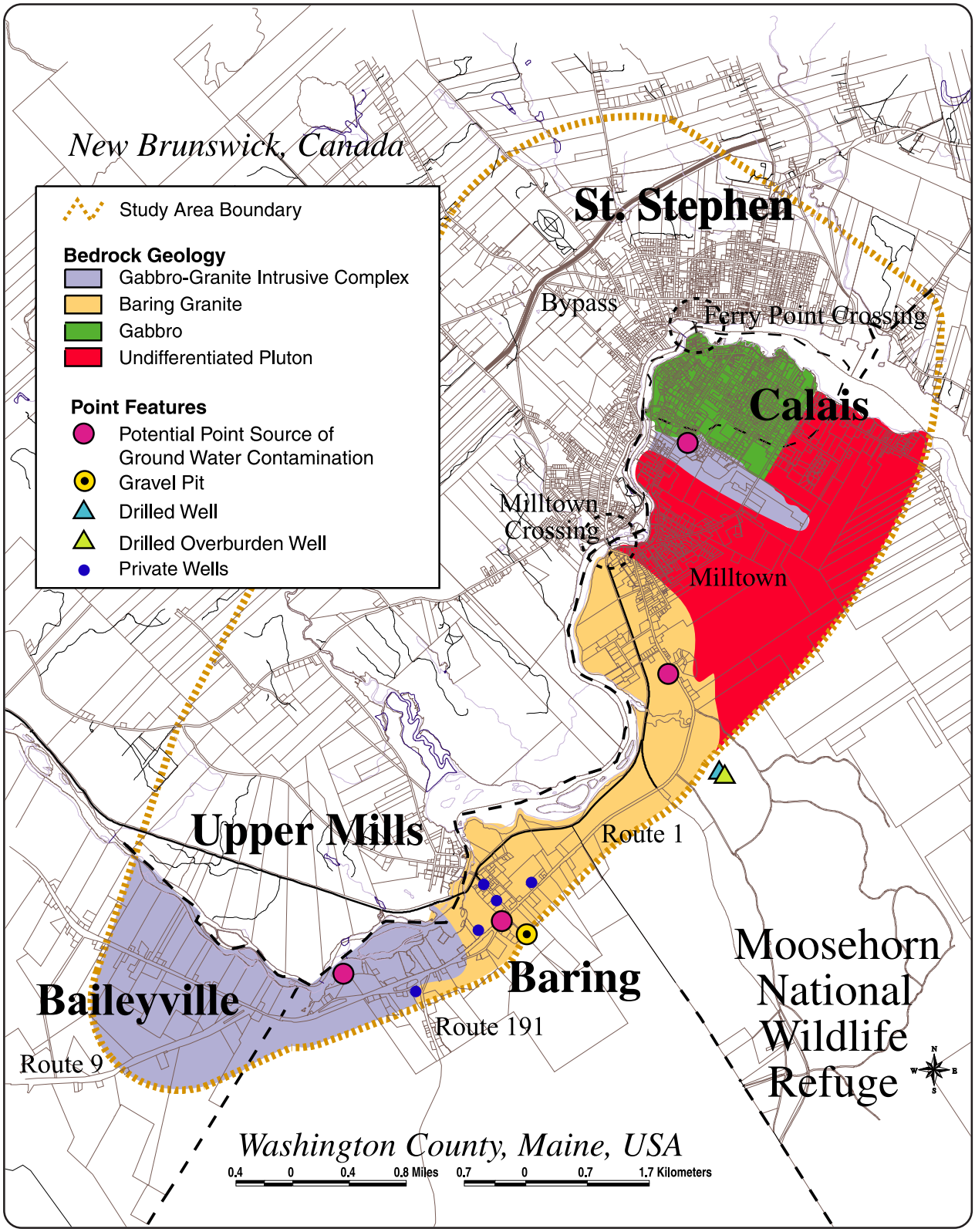
According to the U.S. Department of Agriculture (USDA), the Natural Resource Conservation Service (NRCS), approximately 35 soil types exist within the Study Area (USDA 1994). Some of these soils are identified as prime farmland soils, soils of statewide importance, or hydric soils (see Section III-E-7-f — Prime and Unique Farmlands, page III-22 and Section III-B-2-d — Wetlands and Tidal Flats, page III-8).

c. Geology

The Study Area is underlain by a series of Devonian age plutonic rocks characterized by complex contact relationships (Figure III-1, next page). The complex contacts are thought to be a result of the commingling of different magmas prior to cooling (Ludman and Hill 1990). Blanketing the bedrock is a highly variable layer of glacial-marine deposits.

The northern third of the Study Area is underlain by gabbro, undifferentiated pluton, and gabbro-granite intrusive complex. The gabbro can range from fine to medium-grained, equigranular to porphyrititc, and massive to layered. The rocks are black to salt-and-pepper colored on fresh surfaces and rusty black on weathered surfaces. In the area mapped as undifferentiated pluton, the individual igneous rock types have not been identified. The gabbro-granite intrusive complex is a variable, gradational unit developed by commingling between the Baring granite and one or

Figure III-1, Geology and Aquifers Map



more gabbronic magmas, and includes outcrops of diorite, quartz-diorite, and tonalite. The gabbro-granite intrusive complex underlies the southwestern third of the Study Area (Ludman and Hill 1990).

The Baring granite underlies the central part of the Study Area from Baring to Milltown. It is a white to gray-white, medium to coarse-grained, biotite granite. Pegmatites are common and most outcrops are massive with no sense of mineral alignment (Ludman and Hill 1990).

The glacial-marine deposits, referred to as the Presumpscot Formation, blanket the majority of the Study Area. These deposits consist mostly of silt and clay and range in thickness from less than 3 m (9.8 ft.) to as much as 30 m (98.4 ft.) (Borns and Anderson 1982). The Presumpscot Formation commonly overlies till, an unstratified, heterogeneous mixture of sand, silt, clay, and gravel.

2. Aquatic Resources

a. Water Resources

(1) Groundwater

A plutonic bedrock aquifer underlies the entire Study Area and is the main source of groundwater in the Study Area (Figure III-1). Groundwater movement is controlled by the distribution and characteristics of brittle fractures in the bedrock. The highest yields are found where the bedrock is extensively fractured. The bedrock aquifer is generally capable of supplying small domestic needs (Caswell 1987).

The glacial-marine deposits of the Presumpscot Formation are poor aquifers due to the high silt and clay content of the formation. Isolated sand and gravel beds may provide localized areas of high permeability and yield (Borns and Anderson 1982).

According to the Maine Geological Survey (MGS), five private wells exist within the Study Area. The wells range from 24.4 to 121.9 m (80 to 400 ft.) in depth. The MGS acknowledged that their database lacks information on older wells (Loiselle December 2000).

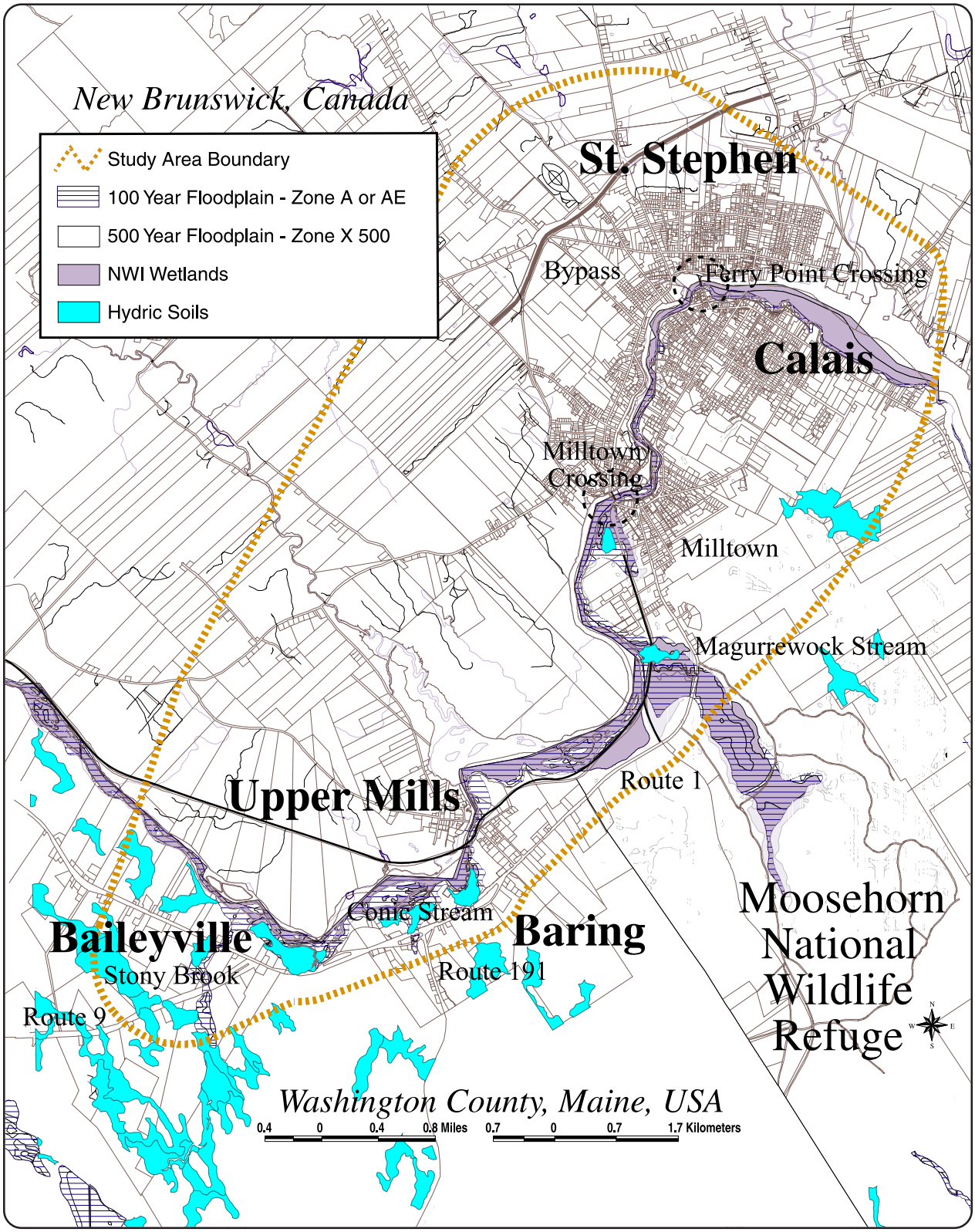
Calais is exploring the siting and operation of a public drinking water supply well, within the Calais Industrial Park.

(2) Surface Water

The Study Area lies within the St. Croix River watershed. Magurrewock Stream, Stony Brook, Conic Stream, and several other small, unnamed tributaries exist within the Study Area. There are no ponds or lakes within the Study Area (Figure III-2, next page).

The St. Croix River flows southeasterly and discharges into the Atlantic Ocean near Passamaquoddy Bay. The St. Croix is a freshwater river until approximately 182.9 m (600 ft.) upstream of the Ferry Point Bridge. The rapids and riffles within the river prevent the tidal influence from reaching further upstream. The MGS has clas-

Figure III-2, Surface Waters, Floodplains and Wetlands Map



sified the area from 182.9 m (600 ft.) upstream of the Ferry Point Bridge as "tidal/fluvial," which means that this section is under tidal influence but does not carry estuarine waters.

The river flow is measured at an international gauging station in Baring. The St. Croix River's flow is fairly constant, ranging between 28.3 and 212.3 cubic meters per second (cms) (1,000 and 7,500 cubic feet per second [cfs]). The average annual discharge over a 23-year period is 78.2 cms (2,762 cfs) (Calais 1992).

The water quality of the St. Croix River from Baileyville east to the tidal waters is defined as Class C (Mitnik 2000). The designated uses of Class C waters include fishing; drinking water supply after treatment; recreation in and on the water; industrial processes and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as a habitat for fish and other aquatic life (38 MRSA § 465).

Generally, Class C waters may not have a dissolved oxygen content of less than 5 parts per million (ppm) or 60 percent of saturation, whichever is higher. In salmonid spawning areas, the water quality must remain at the existing higher standards. From May 15 through September 30, the amount of human generated *Escherichia coli* bacteria may not exceed a geometric mean of 142 per 100 milliliters (ml) or an instantaneous level of 949 per 100 ml. Discharges to Class C waters are allowed to cause some changes to aquatic life, provided the receiving waters can still support indigenous fish species and maintain the structure and function of the resident biological community (38 MRSA § 465).

In the tidal area, the St. Croix River is designated as Class SC (Mitnik 2000). Class SC is the third highest classification for estuarine and marine waters in Maine (38 MRSA § 465-B). The designated uses for Class SC waters include recreation in and on the water; fishing; aquaculture; propagation and restricted harvesting of shellfish; industrial process and cooling water supply; hydroelectric power generation; navigation; and habitat for fish and other marine and estuarine life (38 MRSA § 465-B).

The dissolved oxygen content of Class SC waters may not be lower than 70 percent of saturation. From May 15 through September 30, the amount of human generated enterococcus bacteria may not exceed a geometric mean of 14 per 100 ml or and instantaneous level of 94 per 100 ml. The numbers of total coliform bacteria or other specified indicator organisms in restricted shellfish harvesting areas are subject to criteria listed in the National Shellfish Sanitation Program Manual of Operations, Part 1, Sanitation of Shellfish Growing Areas, United States Food and Drug Administration (38 MRSA § 465-B). Pulp and paper plant effluent, sewage effluent, and stormwater runoff have resulted in elevated levels of suspended solids, bacteria, and metals in the St. Croix River near Calais (Calais 1992).

The water quality of the Stony Brook, Conic Stream, and the Magurrewock Stream, the largest tributary to the St. Croix River in the Study Area, is designated as Class A (Mitnik 2000). The designated uses of Class A waters include drinking water

after disinfection; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as a habitat for fish and other aquatic life (38 MRSA § 465-A).

The dissolved oxygen content of Class A waters may not be less than 7 ppm or 75 percent of saturation, whichever is higher. Both the aquatic life and bacteria content of Class A waters must remain as they occur naturally. Direct discharges to Class A waters must be of equal or better water quality than the receiving waters (38 MRSA § 465-A).

b. Aquatic Habitats and Fisheries

Although the St. Croix River has been developed for hydroelectric power, it provides good habitat and contains the second largest Atlantic salmon run in the State of Maine (Maine Rivers 2000). The New England Fishery Management Council has designated the St. Croix River as a Habitat Area of Particular Concern (HAPC) and Essential Fish Habitat (EFH) for Atlantic salmon (*Salmo salar*) (Morris 2000). The salmon in the St. Croix River are protected by the Atlantic salmon regulations, which prohibit the taking or possessing of Atlantic salmon from certain waters. Any salmon that are accidentally caught must be returned to the water immediately, alive, and uninjured (Atlantic Salmon Commission 2000).

The designation of HAPC is reserved for those habitats that are particularly rare, important, and/or vulnerable to anthropogenic impacts. While this designation brings no additional statutory obligations for compliance, it serves as a reminder that care should be taken to ensure that this important habitat is not adversely impacted (Morris 2000).

The EFH designation means that the waters and substrate necessary to support the federally-managed fish species for spawning, breeding, feeding, and growth to maturity are present. The Magnuson-Stevens Fishery Conservation and Management Act requires that federal agencies that may adversely affect designated EFH consult with the National Marine Fisheries Service (NMFS).

The Calais coastal area has limited fisheries activity due to the poor water quality and fisheries habitat; however, the water quality has improved over the last ten years. Important species in the Calais coastal area include Atlantic salmon, alewives, shad, and striped bass. American eels and smelts are found in the low-tide mud flat area (Maine Rivers 2000). The St. Croix River has both a small stocked and native run of alewives (*Alosa pseudoharengus*) (Swan 2000). The economic value of the fisheries near Calais is considered fair to poor, which is a direct result of the poor water quality and lack of appropriate habitat. Fish harvesting on the St. Croix River is mainly recreational.

The Magurrewock Stream is one of three eastern Maine streams that are stocked with brook trout each spring. This stream has a high value rating as a fishery resource.

The Maine Department of Inland and Wildlife Fisheries (MDIF&W) has categorized the lakes, ponds, and streams in Maine as cold-water fisheries or warm-water

fisheries. Cold-water fisheries support salmonid species, whereas warm-water fisheries support species like black bass, chain pickerel, and perch. Originally, all Maine rivers were cold-water fisheries, and the State manages the waters with the goal of attaining natural cold-water fisheries (Mitnik 2000).

c. Floodplains

Federal Executive Order 11988 requires all projects that involve the expenditure of federal funds to be reviewed for flooding potential and to be located outside of a Special Flood Hazard Area, when practicable.

Approximately 364.8 ha (901.5 ac.) of the 100-year floodplain of the St. Croix River lie within the Study Area (Figure III-2, page III-4). The land within the 100-year floodplain is mostly forested land. Digital Federal Emergency Management Agency (FEMA) floodplain mapping and studies were completed for Calais, Baileyville, and Baring in 1997.

The areas identified by FEMA as zone A are subject to inundation by a 100-year flood. Because detailed hydraulic analyses have not been performed, no base flood elevation or depths are shown. The two areas within the Study Area identified as zone A include the land surrounding Stony Brook and a small area near the intersection of Route 1 and Route 191 (FEMA 1997).

The areas identified by FEMA as zone AE are subject to inundation by a 100-year flood as determined by detailed methods. The areas adjacent to the St. Croix River and the Magurrewock Stream have been identified as zone AE, and regulatory flood elevations have been determined(FEMA 1997).

Several areas within the Study Area have been identified by FEMA as zone X500. These areas are subject to flooding during a 500-year flood event.

The majority of the Study Area has been classified by FEMA as zone X, which are areas with moderate or minimal flooding potential. Buildings in these zones, however, could be flooded by severe, concentrated rainfall where local drainage systems are inadequate.

Executive Order 11988 requires the following for projects that involve the expenditure of federal funds in a floodplain:

- To be reviewed for their potential to affect or be affected by a floodplain.
- To consider alternatives, and be located outside a Special Flood Hazard Area unless there is no other practicable alternative (areas of special flood hazard within the Study Area include zones A and AE).
- To be designed or modified to minimize the potential for loss or harm.
- To involve public notification and review (Sidell 2000).

Calais and Baileyville both participate in the National Flood Insurance Program (NFIP) and have floodplain management ordinances (FMO) that establish development standards. Development standards are set by the FMO for all develop-

ment, and state that development shall be adequately anchored, use construction materials that are resistant to flood damage, use construction methods and practices that would minimize flood damage, and use components designed and/or located so as to prevent water from entering or accumulating within the components during flooding conditions (SPO 2001).

d. Wetlands and Tidal Flats

The National Wetland Inventory (NWI) is a program administered by the U.S. Fish & Wildlife Service (USFWS) for mapping and classifying wetland resources in the United States. The USFWS has identified approximately 52 wetlands consisting of 359.9 ha (978.4 ac.) within the Study Area (Figure III-2, page III-4) (USFWS 1977). The majority of the wetlands within the Study Area are concentrated along the St. Croix River.

Hydric soils are soils that are saturated, flooded or ponded long enough during the growing season to develop at least temporary conditions where there is no free oxygen in the soil around the roots. Hydric soils correspond closely to wetlands. According to the NRCS, approximately 105.7 ha (372.5 ac.) of hydric soils exist within the Study Area. The largest concentration of hydric soils is in the southern portion of the Study Area.

The St. Croix River, east of the Ferry Point Crossing, is subject to tidal fluctuations. The tidal flat areas (areas exposed at low tide) provide habitat for American eels and smelts. These areas serve as feeding grounds for inland and coastal wading birds and other waterfowl.

e. Wild and Scenic Rivers

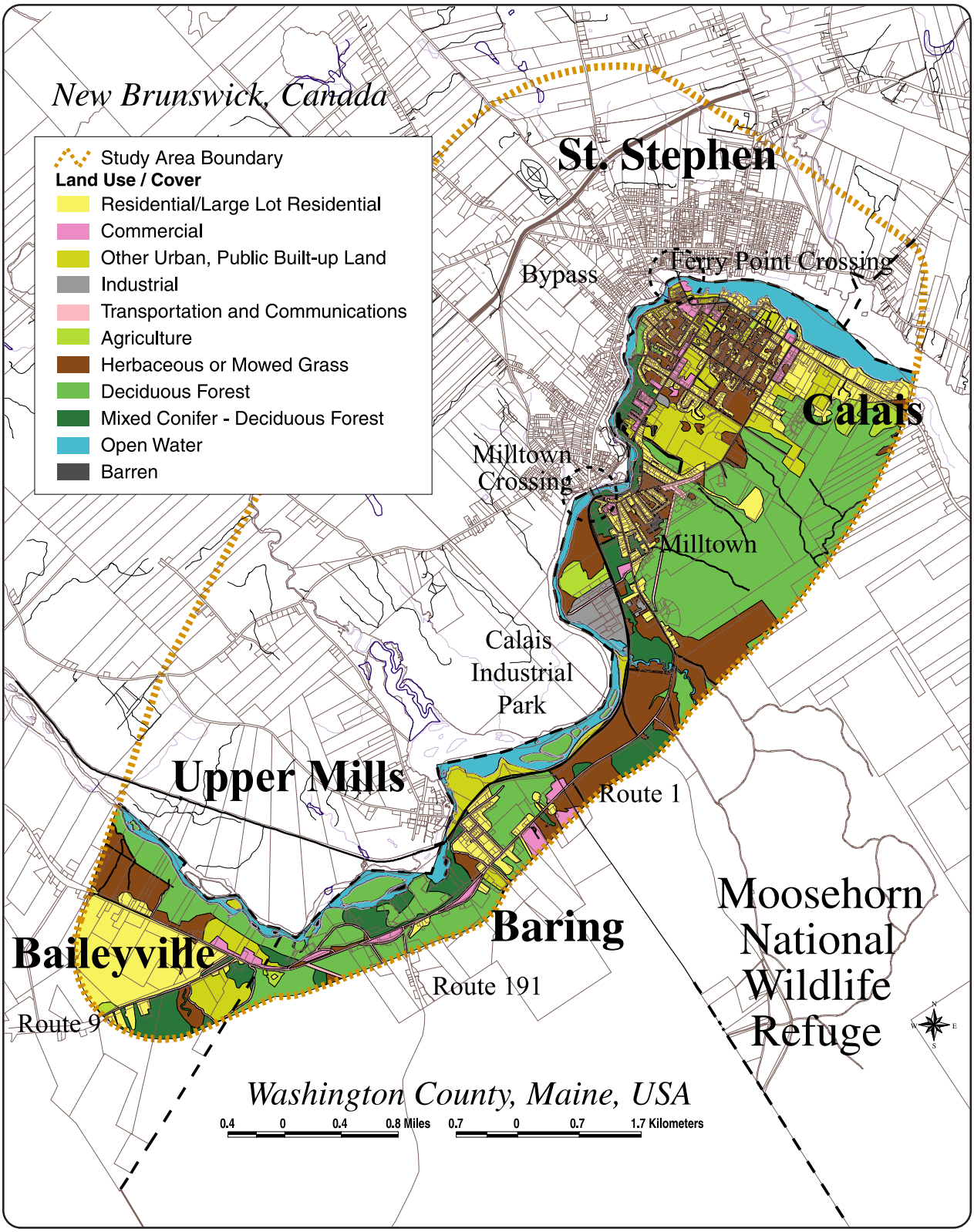
There are no wild and scenic rivers within the Study Area (National Park Service 2001).

3. Vegetation

The Study Area contains approximately 833.9 ha (2,060.6 ac.) of mixed coniferous-deciduous forested land, 331.4 ha (819.0 ac.) of herbaceous land, and 36.4 ha (90.0 ac.) of agricultural land (Figure III-3, next page). The most prevalent forest type is the northeastern spruce-fir forest. This forest type consists of dense needleleaf evergreens of low to medium height, with a modest mixture of broadleaf deciduous trees. The dominant species of this forest type are *Abies balsamea* (balsam fir) and *Picea rubens* (red spruce), while other components are *Acer rubrum* (red maple), *Betula papyrifera* (American white birch), *Betula populifolia* (gray birch), *Populus grandidentata* (bigtooth aspen), *Populus tremuloides* (quaking aspen), and *Sorbus americana* (mountain ash) (Harper-Lore 1999).

According to the Maine Natural Areas Program (MNAP), no rare or unique botanical features or habitat are documented within the Study Area (Evans 2000).

Figure III-3, Vegetation and Land Use Map



4. Wildlife

a. Common Species

Wetlands and forested areas within the Study Area provide habitat for a variety of wildlife, including: birds, small mammals, large mammals, reptiles, and amphibians. Waterfowl, wading birds, songbirds, shorebirds, seabirds, and raptors can be seen throughout the Study Area. Mammals observed within or near the Study Area include muskrat, beaver, mink, moose, and deer. Reptiles and amphibians within the Study Area include a wide variety of frogs, toads, salamanders, snakes, and turtles.

b. State-Regulated Wildlife Habitats

The MDIF&W defines two types of Special Wildlife Habitat: Essential Habitat and Significant Habitat. Essential habitats are defined as "…areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine and which may require management considerations."

The MDIF&W informally identified an area of Essential Habitat: one bald eagle nest on a man-made platform at the Moosehorn National Wildlife Refuge (Welch 2000) (see Section IV-B-5 — Endangered, Threatened, and Other Protected Species).

Significant Habitats are defined by the Natural Resource Protection Act (NRPA) as:

- Habitat for state and federally listed endangered and threatened species,
- High and moderate value deer wintering areas and travel corridors,
- High and moderate value waterfowl and wading bird habitats, including nesting and feeding areas,
- Shorebird nesting, feeding, and staging areas, or
- Seabird nesting areas.

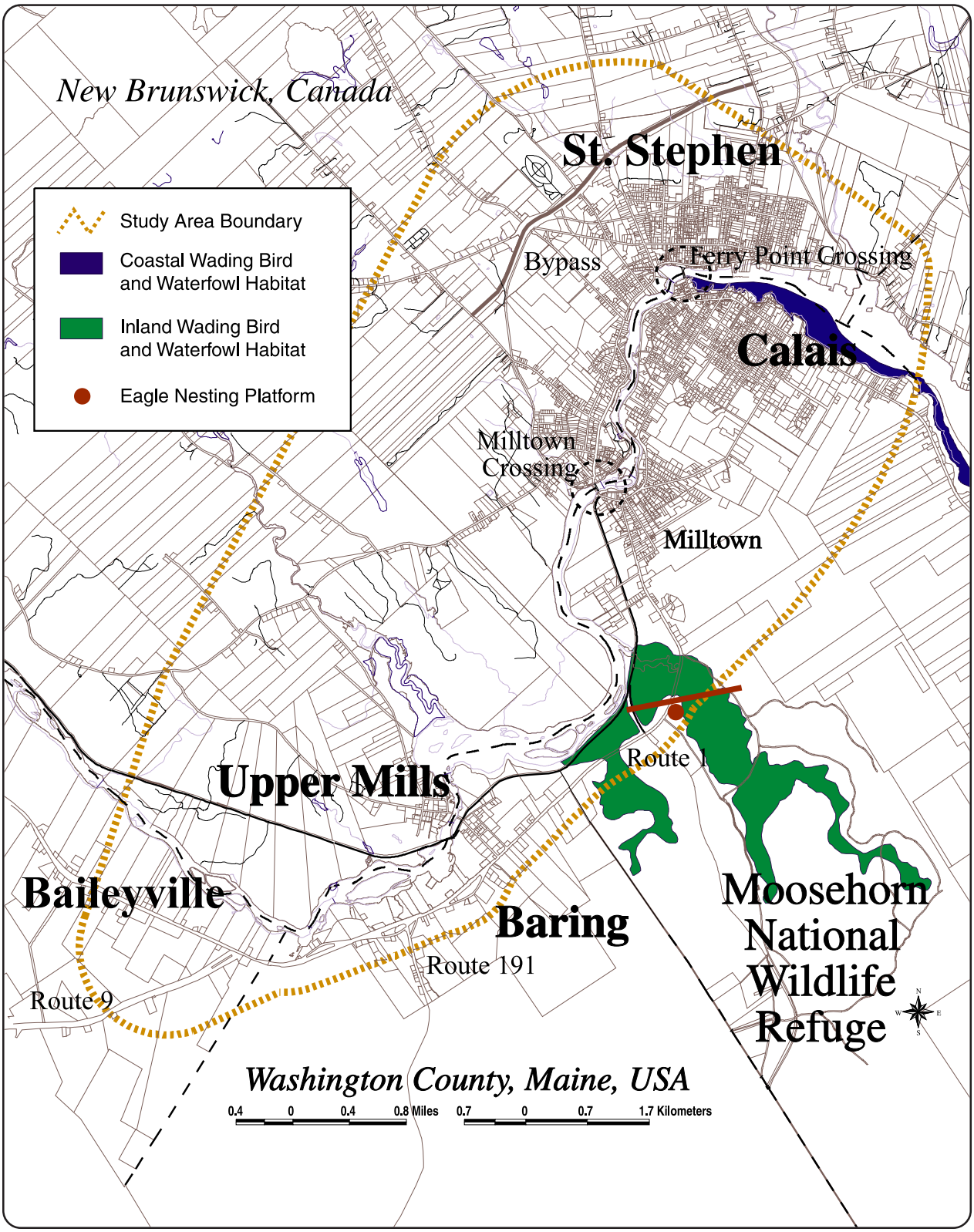
Significant Habitats within the Study Area contains approximately 269.5 ha (665.9 ac.) of inland bird habitat and 77.2 ha (190.8 ac.) of coastal wading bird habitat (Figure III-4, next page). The MDIF&W has designated the large complex of wetlands near the confluence of Maguerrewock Stream and the St. Croix River as a high/moderate value wading bird and waterfowl habitat (Welch 2000). In addition, the river channel and mud flat area is important for waterfowl. Osprey, ducks, eagles, and smaller birds feed in this area.

5. Endangered, Threatened, and Other Protected Species

a. State Endangered and Threatened Species

According to the MDIF&W, one nest of a state-threatened bald eagle lies within the Study Area. However, this nest is not formally designated as an Essential Habitat because it is a man-made structure (Welch 2000).

Figure III-4, Sensitive Habitat Map



b. *Federal Endangered and Threatened Species*

According to the USFWS, the state and federally threatened bald eagle is known to nest within the Study Area. No other federally endangered, threatened or rare species are known to exist within the Study Area (Tripp 2000).

c. *Other Protected Species*

The MNAP stated that no rare or unique botanical features exist within the Study Area (Evans 2000).

6. Coastal Zone Management

The St. Croix River, beginning approximately 182.9 m (600 ft.) upstream of the Ferry Point Crossing, is subject to tidal fluctuation and influence.

Congress passed the Coastal Zone Management (CZM) Act in 1972. This law, which is administered by the National Oceanic and Atmospheric Administration, authorizes funding for state coastal programs around the country to work in partnership with the federal government to balance coastal environment conservation and human activities with demands placed upon the coastal environment (Maine Coastal Program 2000). Compliance with the CZM Act is achieved by complying with 12 acts that regulate activities in the Coastal Zone.

Maine's Coastal Program was established in 1978 and is administered by the Maine State Planning Office. This program is a partnership among local, regional, and state agencies and many private organizations, including local land trusts and economic development groups. The Coastal Program assists Maine's natural resource agencies enabling them to oversee and enforce other laws. At the local level, the coastal program assists communities with land use planning to help decrease the impact of development on natural resources and community character (Maine State Planning Office Coastal Program 2000).

"Maine's coastal zone encompasses all towns and cities in Maine that have land along the coast or a tidal waterway, such as a river or bay. This includes towns from Kittery to Calais, inland to Augusta along the Kennebec, and Bangor along the Penobscot" (Maine State Planning Office Coastal Program 2000). In addition, the zone includes Maine's territorial waters, which extend three miles out to sea. Maine's coastal zone includes 144 towns, 4,568 miles of coastline, and 4,613 islands (Maine State Planning Office Coastal Program 2000). The St. Croix River upstream to the Calais-St. Stephen area is under tidal influence.

When managing Maine's coast, the coastal program takes into account all the factors comprising Maine's coast, including:

- Water quality and watersheds (see Section III-B-2-a-(2) — Surface Water)
- Coastal flora and fauna (see Section III-B-2-b — Aquatic Habitat, Section III-B-4 — Wildlife)
- Coastal wetlands (see Section III-B-2-d — Wetlands and Tidal Flats)

- Public access and land (see Section III-E-4 — Public Parks and Recreation Lands)
- Commercial fisheries (see Section III-B-2-b — Aquatic Habitat, Section III-B-7 — Navigation)
- Aquaculture (none in the Study Area)
- Economic and development trends (see Section III-E-5 — Economic Environment)
- Ports and harbors (none in the Study Area)
- Submerged lands (see Section III-B-2-d — Wetlands and Tidal Flats and Section III-B-2-b — Aquatic Habitat)
- Coastal hazards (rare in the Study Area)
- Marine debris (statewide lack of data on amount and distribution of marine debris, none observed)

7. Navigation

According to the navigable waters protection officer for the Maritime Region (New Brunswick), few navigational uses of the St. Croix River exist, especially upstream of the Ferry Point Crossing. Navigation of the St. Croix River is limited by the height of the Ferry Point and Milltown Crossings. The inland area of the St. Croix River is not on navigational charts and is not buoyed. Currently, the river is used by small recreational and fishing boats (Boudreau 2001).

A new bridge built in the Calais/St. Stephen area should be at least as high and as wide as the spans of the Ferry Point Crossing (Boudreau 2001).

C. Atmospheric Environment

1. Air Quality

The Study Area is in an air quality attainment area for all pollutants (Ostrowski 2000). A review of available monitored air quality data indicates that existing ambient one-hour carbon monoxide (CO) concentrations in eastern Maine are approximately 4 ppm with eight-hour average values of approximately 2 ppm. These values are well below the National Ambient Air Quality Standards (NAAQS) of 35 ppm (one-hour) and 9 ppm (eight-hour).

2. Noise

a. Noise Sensitive Areas

Seven noise sensitive areas (NSAs) were identified in the Study Area:

- NSA-1 and NSA-2 represent rural areas along Route 1 and Route 9 in the vicinity of Alternative 2A.
- NSA-3 represents a rural and lightly developed area along Route 1 and Route 9 in Bailyville and Baring.

- NSA-4 represents the light to medium density residential and commercial area along Baring Street in the vicinity of Alternative 3.
- NSA-5 represents the medium density residential and commercial area along North Street at the Milltown border crossing.

Table III-1, Summary of Noise Levels by NSA

Noise Sensitive Area	No. of Residences Modeled	No. of Residences in NSA (approx.)	1999 Existing Noise Levels (dBA)
NSA 1	9	27	57 to 62
NSA 2	1	5	63
NSA 3	2	33	67 to 69
NSA 4	5	43	51 to 63
NSA 5	1	6	62
NSA 6	3	102	66
NSA 7	1	15	63

- NSA-6 represents the medium density, mixed commercial corridor along North Street between Baring Street and Main Street in Calais.
- NSA-7 represents the commercial area near the Ferry Point border crossing.

b. Measured Noise Levels

Noise measurements were taken in the Study Area on June 28 and 29, 2000 (Table III-1). Twelve 20-minute measurements and one 24-hour measurement were taken at representative receptors likely to be affected by traffic noise generated by the construction and operation of the build alternatives (Maine Department of Transportation Noise Technical Memorandum 2001).

For sites immediately adjacent to roads, concurrent counts of automobiles, medium trucks, and heavy trucks were recorded and speed observations were made for model calibration purposes. Measurements were taken with a Rion NA-27 Type I sound level meter in accordance with techniques described in the FHWA Report Number FHWA-PD-96-046, Measurement of Highway Related Noise.

Measured noise levels, concurrent traffic data, and other observations made during each measurement period were recorded. Noise levels are A-weighted hourly equivalent noise levels in decibels - Leq(h) dBA. The hourly Leq, or equivalent sound level, is the level of constant sound, which in an hour would contain the same acoustic energy as the time-varying sound (the fluctuating sound levels of traffic noise are represented in terms of a steady-state noise level of the same energy content). A-weighting simulates the response of the human ear to noise. Measurements were conducted during a.m. peak, p.m. peak, and off-peak periods.

D. Transportation Environment

Major roads within the Study Area include Route 9, Route 1, North Street (Route 1 in Calais), Main Street, and South Street (Figure III-5, next page, and Section I-A — Study History). Route 9 has been designated as part of the Maine

Figure III-5, Calais Area Roads and Intersections

Not to Scale

East-West Highway initiative. The purpose of the East-West Highway is to improve Maine's links with the Canadian Atlantic provinces, the provinces of Quebec and Ontario, and the Midwestern United States (see Section I-B-2-a — Regional System Linkage).

The Study Area contains two international border crossings: Ferry Point and Milltown. Each border crossing has a bridge that consists of a northbound lane and a southbound lane with adjacent international inspection facilities. The Ferry Point

Bridge at the western end of Main Street in downtown Calais is the larger of the two bridges and receives the majority of the traffic crossing the border (Table I-1, page III-14). The Milltown Bridge is located approximately 3.2 km (2 mi.) southwest of the Ferry Point Bridge at the end of North Street.

The border crossing at Ferry Point is the worst area of traffic congestion in the Study Area. The average delay for vehicles using the Ferry Point border crossing, recorded in September 2000, was 8.8 minutes (see Section I-B-2-c — Traffic Congestion).

The rural section of Route 1 between the Calais Industrial Park and Route 9 in Baileyville experiences traffic congestion and was estimated to operate at LOS D during peak travel conditions in 1999 (see Section I-B-2-c — Traffic Congestion).

Other transportation services in the Study Area include rail, bus, and air transportation. The Calais Branch rail line is parallel to Route 1 in the Study Area. The MDOT has investigated the possible rehabilitation of this inactive rail line for transporting freight but the cost of rehabilitation would exceed the benefits at this time. A small, private airport exists near Route 1 in Baring, but no large air transport facilities exist within the Study Area. Bus services within the Study Area are provided by the Washington-Hancock County Community Action Agency and West's Transportation (see Section III-E-1-d-(5) —Transportation Services).

E. Land Use, Cultural, Social, and Economic Environment

1. Land Use

a. Land Use Patterns

The urban portion of Calais includes commercial development within the downtown area, and some commercial development along Route 1. Most residential areas are located on side streets in the urban portion of Calais and Milltown (Figure III-3, page III-9). Public and semi-public uses are scattered throughout the urban area. The Calais Industrial Park is south of the urban portion of Calais and north of the Moosehorn Wildlife Refuge, adjacent to Route 1. The Study Area includes portions of the Moosehorn National Wildlife Refuge. The portions of Baring and Baileyville in the Study Area are predominantly rural with a few commercial and residential uses scattered along Route 1. Other land uses in the Study Area include forestland, open water, and a small amount (3.4 ha [8.4 ac.]) of agricultural land (Table III-2, next page).

b. Future Land Use and Zoning

The comprehensive plans for Calais, Baring, and Baileyville promote the expansion of commercial, residential and industrial uses in, or near, areas of existing development and supporting transportation networks. Zoning that permits growth exists along Route 1 immediately south of the urban portion of Calais, which includes the Calais Industrial Park, portions of Route 1 in Baring, and the intersection of U.S. Route 1 and Route 9 in Baileyville (Figure III-6, page III-18). The remainder

of the Study Area is zoned as either rural or resource protection. The rural areas support forestry activities, low impact recreation and sparse residential development (Calais 1992; Baileyville 1995; Maine Land Use Regulation Commission 1999).

Table III-2, Land Use in the Study Area

Category	ha (ac.)
Residential	364.3 (900.2)
Commercial	70.9 (175.2)
Other Urban, Public or Built Up Land	184 (454.7)
Industrial	18.6 (46.0)
Transportation and Communication	104.8 (259.0)
Agriculture	36.4 (89.9)
Herbaceous/Mowed Grass	331.4 (818.9)
Forest	833.8 (2,060.4)
Open Water	188.3 (465.3)
Barren	1.8 (4.4)
Total	2,134.3 (5,274)

Calais, Baring, and Baileyville have zoning ordinances. Calais and Baileyville have locally adopted zoning ordinances; Baring has zoning under the jurisdiction of the Maine Land Use Regulation Commission (LURC). There are three areas zoned for development within the Study Area:

- Residential and commercial zones within the urban core of Calais and along Route 1 to the industrial park, which is zoned industrial (Calais 1996)
- Several development subdistricts consisting of the village and several areas along Route 1 in Baring (Maine Land Use Regulation Commission 1999)
- The intersection of Route 1 and 9 in Baileyville (Baileyville 1997)

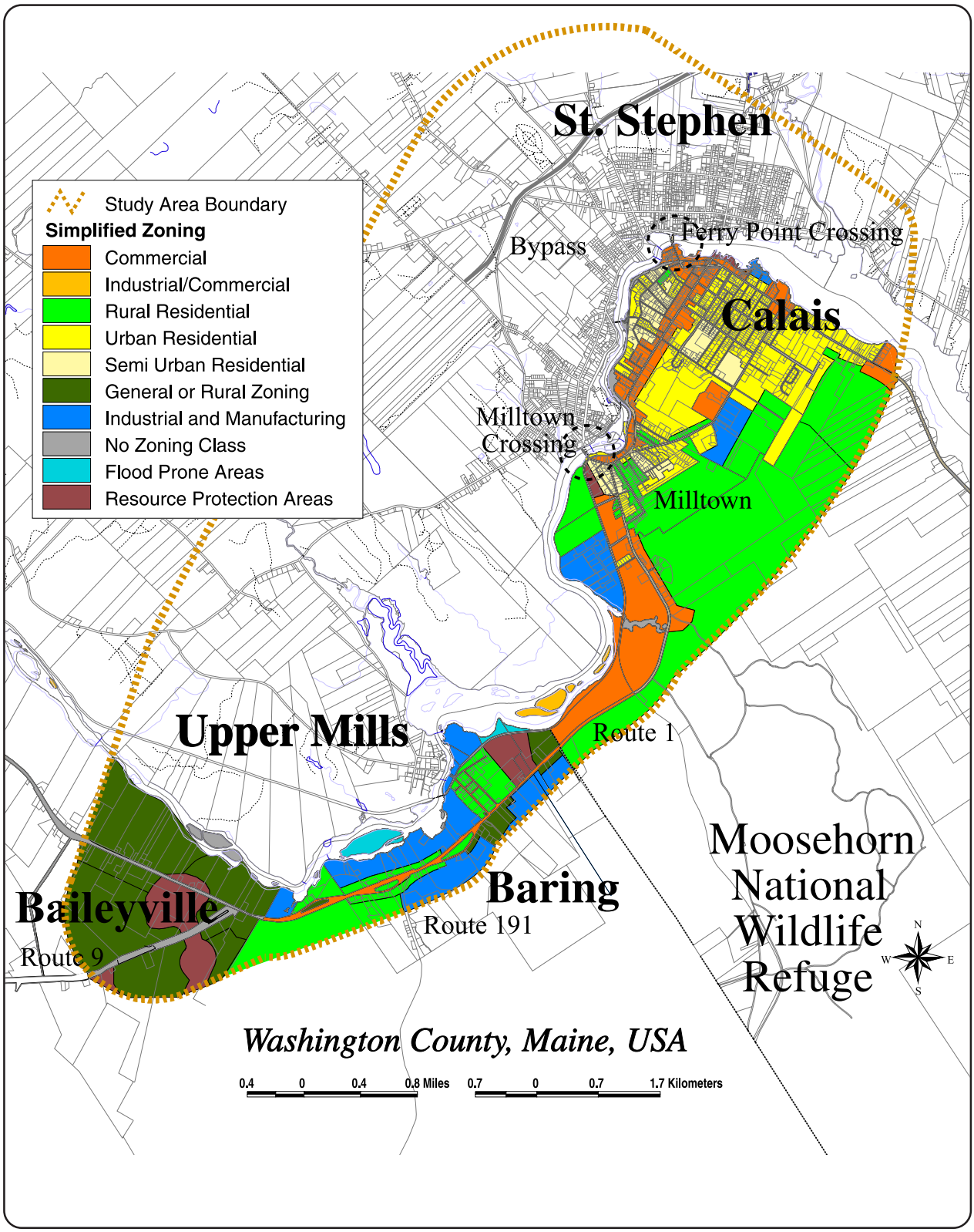
The remaining portions of the Study Area are zoned as either rural residential, forestry and agricultural management, rural, or resource protection.

Two notable future developments currently being planned that will help draw tourists to the area are the Downeast Heritage Center and the East Coast Greenway Trail.

The Downeast Heritage Center is a proposed 1,765 sq. m (19,000 sq. ft.) adaptive reuse and expansion of the Calais Press Building on 0.8 ha (2.0 ac.) on Union Street in Calais. The Downeast Heritage Center would serve as a tourist destination site and important resource for the region's many attractions. The center would promote the tourist attractions and natural resources of Washington County and help to redistribute visitors to these sites.

The East Coast Greenway Trail, the "Trails Connecting Cities," is one of 16 National Millennium Trails in the United States. Calais was designated the northern gateway to this 4,184 km (2,600 mi.) long trail linking Calais with Key West, Florida.

Figure III-6, Generalized Zoning Map



It will link nearly every urban center along the eastern seaboard from Maine's border with Canada to the southern tip of Florida. The 4,184 km (2,600 mi.) long corridor has been mapped and will take more than ten years to complete.

c. Communities and Neighborhoods

There are a number of neighborhoods within the Study Area. These include the downtown business district of Calais, the Union Street area in Calais, the Calais-Milltown area, and the village within the town of Baring.

The Calais downtown business district consists of an area approximately 15 blocks along portions of Main Street, North Street, and adjacent streets. The district includes a number of businesses, some with second story apartments, public buildings and park areas, and several semi-public uses, such as churches. Single family and multi-family homes abut the core commercial areas.

The Calais-Union Street neighborhood is adjacent to the downtown business district. It is located between North Street and the St. Croix River. It is predominately a residential area with mostly single-family homes and some duplexes.

The Calais-Milltown area is south of the Union Street neighborhood and consists of a mix of commercial and residential uses, with some public and semi-public uses. Commercial uses are primarily located along portions of North Street and Baring Street. Residential uses include single-family homes, duplexes, and several mobile home parks. The Calais industrial park is located in Milltown.

The village of Baring is located to the north of Route 1 in the area of Center Street and Main Street. It consists of several blocks of single-family homes, a church, a small recreation area and the municipal fire station.

There are no ethnically unique communities within the Study Area (U.S. Census Bureau 1990).

d. Community Facilities and Services

(1) Educational Facilities

Three educational facilities are in the Study Area: the Calais Elementary School; the Calais Middle School; and the Frank Beckett Center (Figure III-7, page III-21).

(2) Religious Facilities

The religious facilities in the Study Area consist of eleven churches in Calais and one church located in Baring (Figure III-7, page III-21). The Methodist Homes have a meeting facility that is used by a number of groups, such as senior citizens, church groups and special interest groups.

(3) Emergency Facilities

A number of emergency facilities are present in the Study Area (Figure III-7, page III-21). These include the Calais Police and Fire Departments, located at the city's North Street Building; the Calais Fire Training Center on North Street; and McGovern Ambulance Service on Union Street in Calais (Calais 1992). The Baring Fire Department is on Main Street in Baring.

(4) Health Care Facilities

Health care facilities in the Study Area are the Calais Regional Hospital, Downeast Health Services, Barnard Nursing Home, Eastern Agency on Aging, Community Health and Counseling Services, and a number of private physician and dentist offices (Calais 1992) (Figure III-7, next page). Residents in Baring and Baileyvile use health care facilities in Calais.

(5) Transportation Services

The Washington-Hancock County Community Action Agency provides social service public transportation in the region. This service includes regional demand response service and fixed route service for the Passamaquoddy Indian Tribe. West's Transportation, a private corporation, provides daily intercity bus service between Calais and Bangor (Calais 1992).

(6) Cemeteries

There are two cemeteries within the Study Area: the Calais cemetery on South Street and a cemetery adjacent to Cemetery Road in Baring (Figure III-7, next page).

(7) Other Governmental Services

Federally-owned facilities in Calais include the U.S. Customs facilities at Ferry Point and Milltown and the U.S. Post Office (Figure III-7, next page). State facilities and buildings include the Tourist Information Center, the Armory, the Department of Motor Vehicles, Maine District Court, the Department of Human Services, the Department of Labor, and Community Health and Counseling Children's Services. The state of Maine owns several parcels of land along the St. Croix River including several islands (Calais 1992).

Calais facilities and buildings include the Calais Free Library, the water department building, the sewage treatment plant, city-owned railroad buildings, the transfer station, the industrial park, and a number of city parking lots. Other municipal facilities include Baring's former town disposal area and Baileyville's industrial park land.

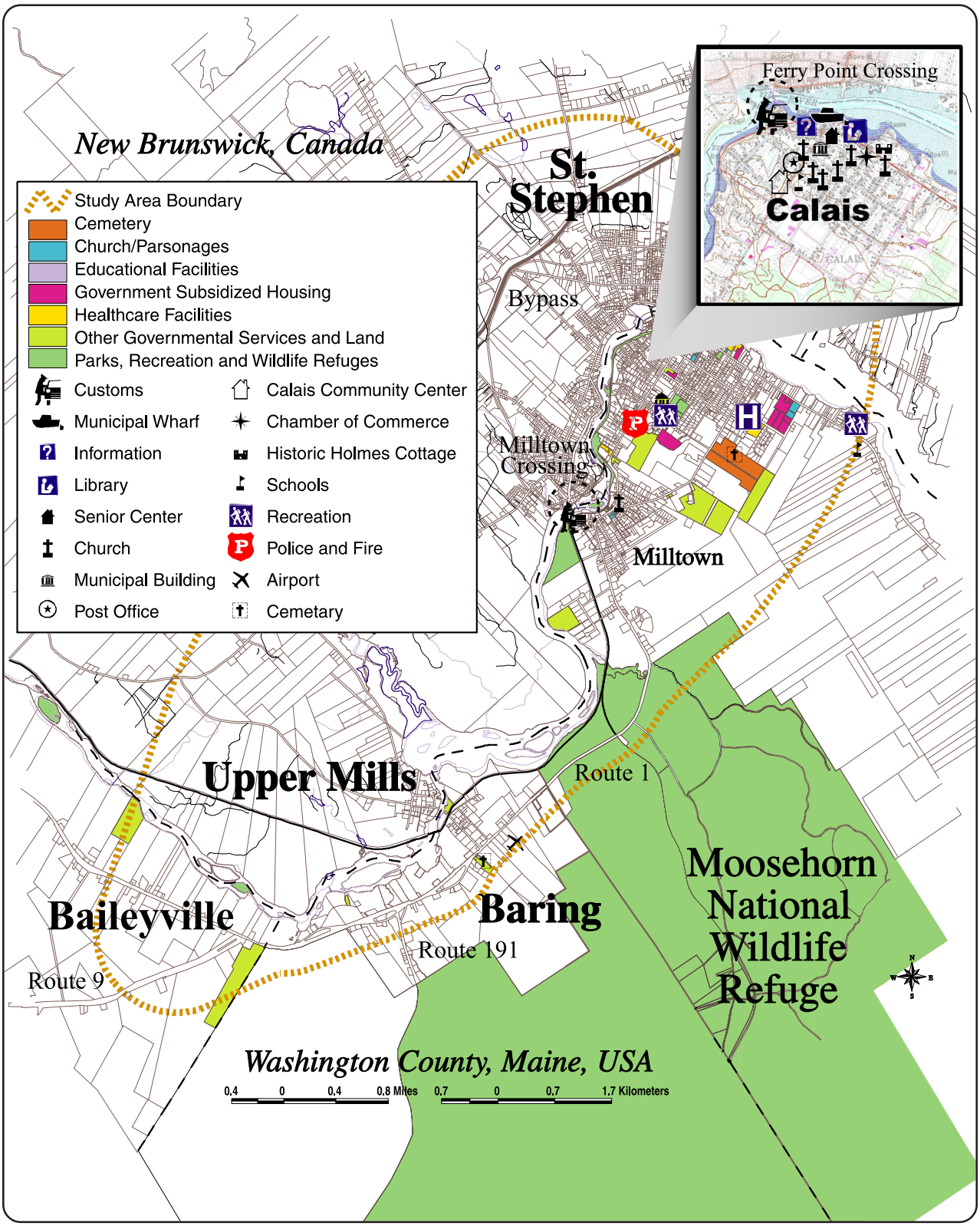
e. Tribal Lands

No tribal lands are present within the Study Area (U.S. Bureau of Indian Affairs 2001).

In 1794, Maine was a part of the Commonwealth of Massachusetts and the St. Croix River was named Schoodic. The Treaty of 1794 between the Passamaquoddy Indians and the Commonwealth of Massachusetts states:

> *"Also assign to said Indians the privilege of fishing on both branches of the river Schoodic without hindrance or molestation and the privilege of passing the said river over the different carrying places thereon;. . . The said islands, tracts of land and privileges to be confirmed by the Commonwealth of Massachusetts to the said Indians and their heirs forever."*

Figure III-7, Community Facilities and Services Map



This treaty, dated September 29, 1794, grants the Passamaquoddy tribe the right to fish along the St. Croix River. According to Passamaquoddy Governor Richard Doyle, these rights are currently exercised by tribe members (Doyle 2001).

f. Prime and Unique Farmland Soils

The Farmland Protection Policy Act (FPPA) of 1981 was established to help protect the nation's farmland, which the federal government views as a unique natural resource. The U.S. Department of Agriculture is responsible for implementing this policy and assuring that the actions of the Federal Government do not cause farmland to be irreversibly converted to nonagricultural uses, when other national interests do not outweigh the benefits of maintaining farmland (7 USC 73 § 4201).

To address potential impacts to farmlands, a soil classification system based on soil characteristics is used. This classification of farmland soils consists of four categories: prime farmland soils, unique farmland soils, additional farmland soils of statewide importance, and additional farmland soils of local importance. Areas of soils in these categories that are covered with structures or pavement are considered to have been converted to urban uses.

No active farmland exists within the Study Area. Approximately 66.7 ha (164.9 ac.) of prime farmland soils (Figure III-8, next page) and 119.1 ha (294.4 ac.) of soils of statewide importance (Figure III-9, page III-24) exist within the Study Area. An additional 914.9 ha (1,025.1 ac.) of soils would be considered prime farmland soils if drained. However, the Washington County Conservation District Office indicated that none of these areas are drained (Pennell 2000). The majority of the prime farmland soils and farmland soils of statewide importance are at the southern end of the Study Area near Baring. There are no unique farmland soils within Washington County (Pennell 2000).

Two small areas within the Study Area lack soil descriptions. No data exists for the soils of the Moosehorn National Wildlife Refuge or for another small area in the southern portion of the Study Area.

2. Uncontrolled Petroleum and Hazardous Wastes

Hazardous waste data from the EPA's Basins Core Dataset were analyzed. Information included the National Priority List (NPL), Resource Conservation and Recovery Information System (RCRIS), Comprehensive Environmental Response Compensation and Liability Act Information System (CERCLIS), water quality monitoring points, and gauge station data.

MDOT performed a Phase I site assessment to look for indicators of hazardous waste contamination. Three potential areas of hazardous waste contamination were found near the Calais Industrial Park: the Campbell Siding and two properties owned by Dicenzo Construction (MDOT 2001).

Figure III-8, Prime Farmland Soils Map

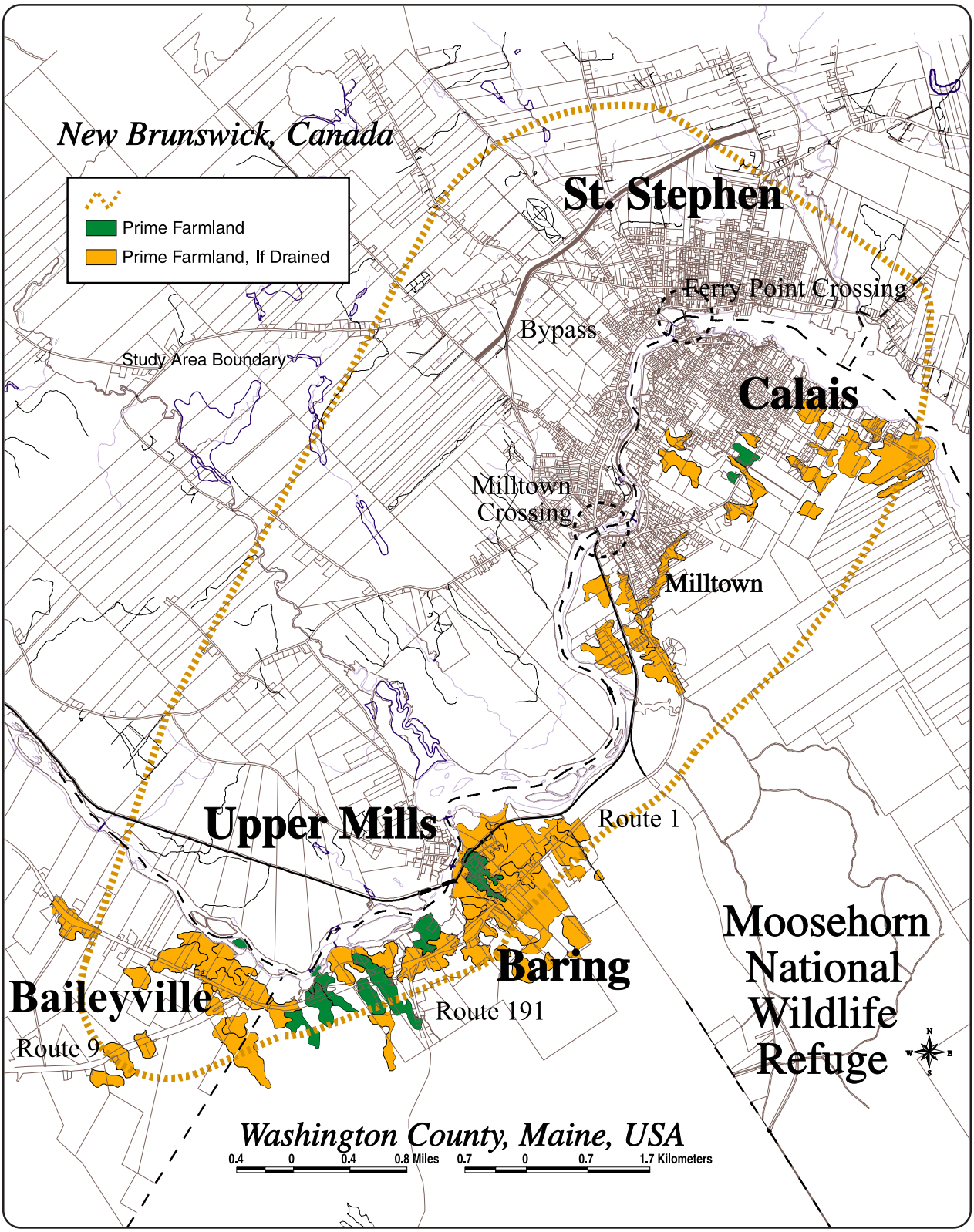
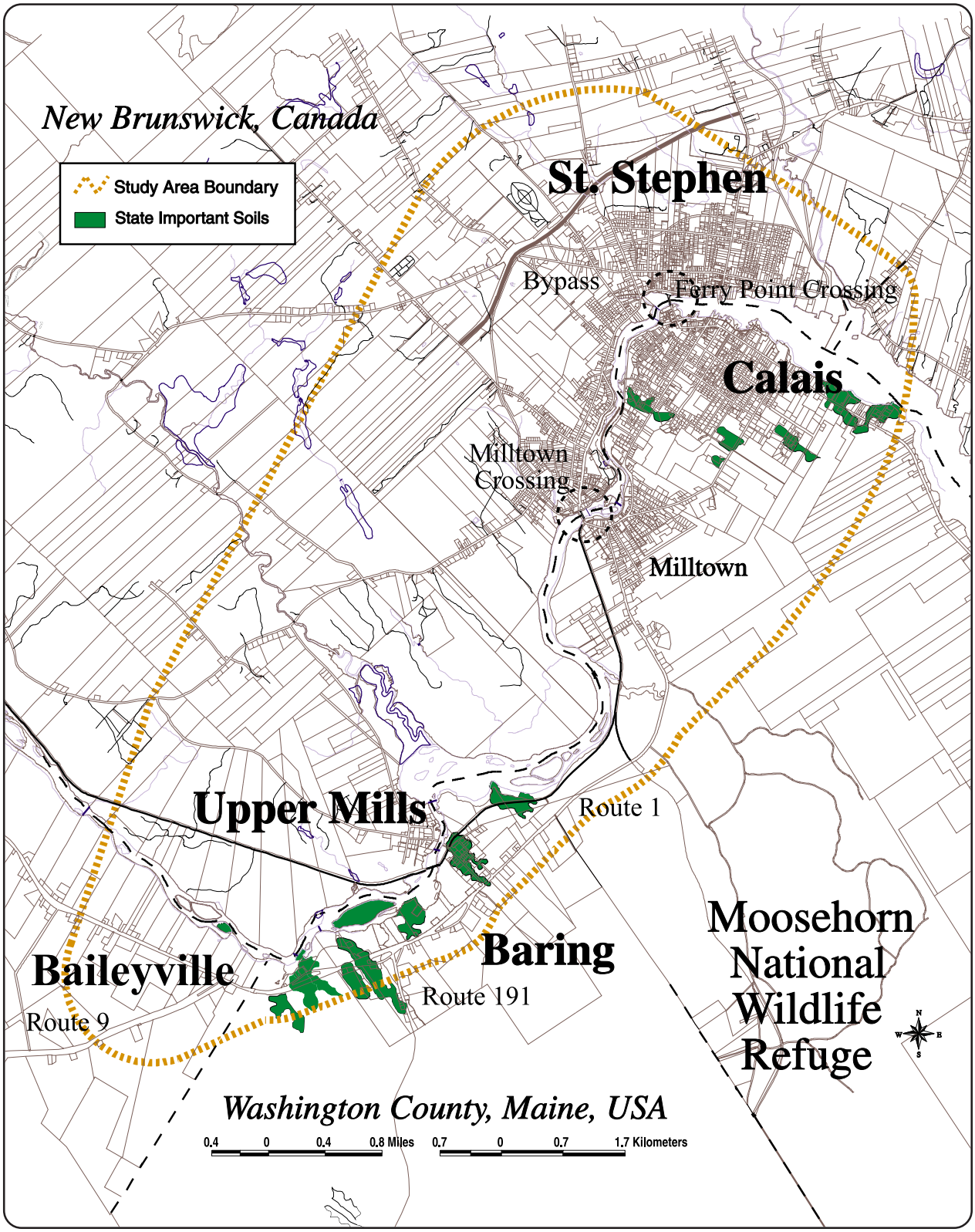


Figure III-9, Soils of Statewide Importance Map



3. Cultural Resources

Under Section 106 of the National Historic Preservation Act of 1966 (NHPA) [16 USC 470], federal agencies are required to consider the effects of their actions on archaeological and historic resources. As a property with public interest, the FHWA is also required to consider the impacts of its actions on cultural resources under Section 4(f) of the U.S. Department of Transportation Act of 1966.

a. Historic Resources

The Study Area contains three historic districts and nine historic structures listed on the NRHP (Table III-3).

Table III-3, Historic Resources

Resource	Address (Date Listed)
Calais Historic District	Church, Main, and North Streets (12-20-78)
Calais Residential Historic District	Area along Main Street and Calais Avenue from Calais Avenue to Swan St (10-28-94)
First Congregational Church	Calais Avenue (7-12-78)
Gilmore House	316 Main Street (6-14-79)
Thomas Hamilton House	78 South Street (2-4-82)
Hinckley Hill Historic Districts	305-326 Main Street (10-28-94)
Holmes Cottage	241 Main Street (4-4-88)
Dr. Job Holmes House	247 Main Street (4-5-90)
Theodore Jellison House	River Road (11-23-84)
St. Anne's Episcopal Church	Church Street (7-8-82)
George Washburn House	318 Main Street (2-11-82)
Whitlocks Mill Light Station	South Bank of the St. Croix River (1-21-88)

Source: National Park Service. National Register of Historic Places. National Register Information System, Online. Database Refreshed 20 July 2000. Available http://www.nr.nps.gov.

The Maine Historic Preservation Commission (MHPC) identified two potentially important historic structures within the Study Area. One structure is a cellar hole, and the other structure is a probable ice house (Mosher and Cranmer 2000).

b. Archaeological Resources

Phase I and Phase II Cultural Resource Surveys were completed by the MHPC to identify areas of potential archeological importance in the Study Area. One potentially important prehistoric archaeological site and one potentially important historic archaeological site exist within the Study Area.

c. Traditional Cultural Properties

According to the MHPC, several Passamaquoddy families lived in the Calais area until the early 20th century; however, no information exists pertaining to where they lived or harvested food (Mosher and Cranmer 2000).

4. Public Parks and Recreation Lands

Public parks and recreation lands are protected under Section 4(f) of the U.S. Department of Transportation Act of 1966. There are a number of parks and public recreational facilities within the Study Area (Figure III-7, page III-20). The largest is the Moosehorn National Wildlife Refuge, which occupies portions of the Study Area in Calais and Baring. Other recreational facilities in the Study Area include: the waterfront park and walkways, the community center, Memorial Park, the Senior Citizens Center, school playgrounds and athletic fields, the Thomas DiCenzo Athletic Complex, Post Office Park, Pike's Woods, Pike's Park, Steamboat Street boat ramp, and the Milltown Park. A municipal park is in Baring. A section of the International Snowmobile Trail System (ITS 84) crosses Route 1 in Calais and Route 9 in Baileyville (Maine Snowmobile Association 2000).

5. Economic Environment

a. Population, Demographics, and Labor Force

(1) Population

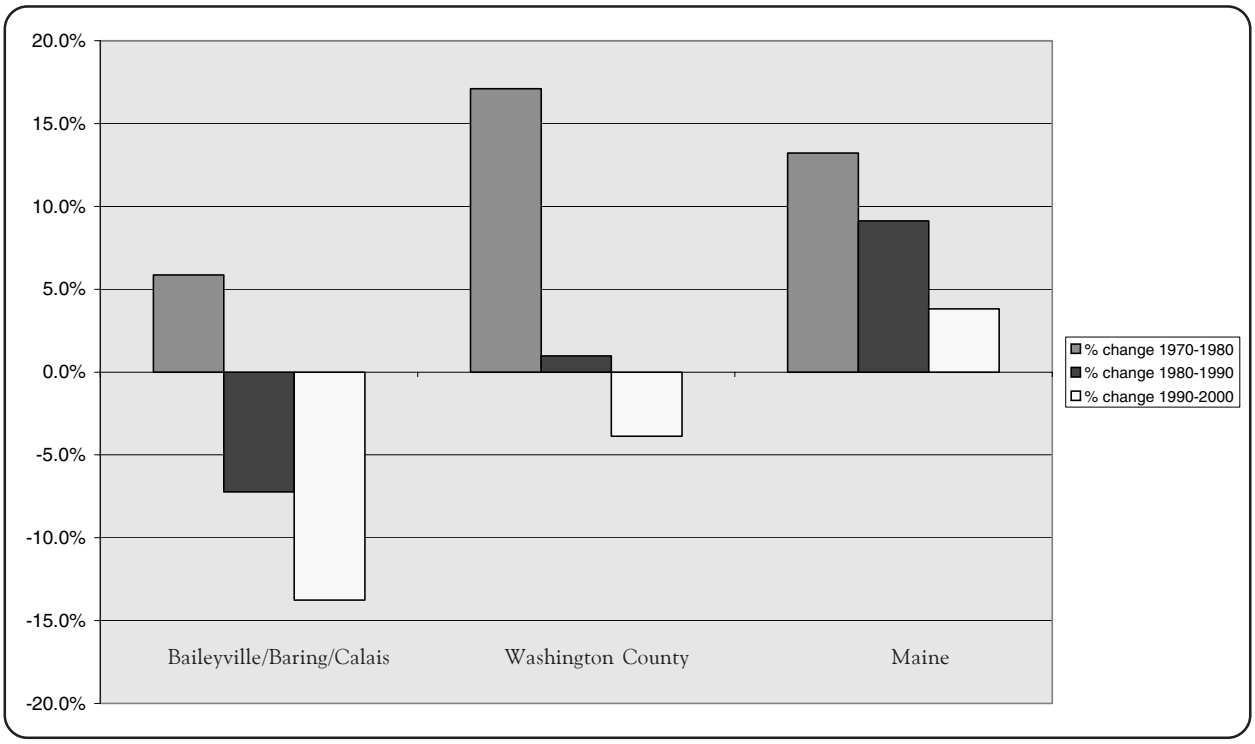
Washington County is predominately rural and accounts for less than three percent of the state's population (33,941 of 1,274,923 persons). The county ranks 13th of 16 in population of Maine counties. Calais, with a population of 3,447 (10 percent of Washington County's total population), is the most populated community within the Study Area and Washington County. Baring and Baileyville have populations of 273 and 1,686, respectively (1 percent and 5 percent of county population respectively). The total population of the three communities combined is 5,406 (U.S. Census Bureau 2000).

From 1970 to 1980, the overall population of the three communities increased by 5.9 percent in the Study Area. In comparison, Washington County and the State had higher rates of population growth (17.1 and 13.2 percent, or 5,104 and 151,321 persons respectively) (U.S. Census Vureau 2000).

From 1980 to 1990 population decreased by 7.2 percent (489 persons) overall in the three communities in the Study Area. Washington County and the State, in contrast, still experienced population growth, but at substantially slower rates (1.0 and 9.1 percent, or 345 and 102,857 persons respectively) (Figure III-10, next page) (U.S. Census Bureau 2000).

From 1990-2000, population in the three communities in the Study Area decreased by 13.8 percent (863 persons). Washington County's population also decreased (by 4.0 percent or 1,367 persons). The state of Maine maintained positive population growth, but population increase slowed from 9.1 percent (102,857 persons) from 1980-1990, to 4 percent (47,023 persons) from 1990-2000 (U.S. Census Bureau 2000).

Figure III-10, Population Growth

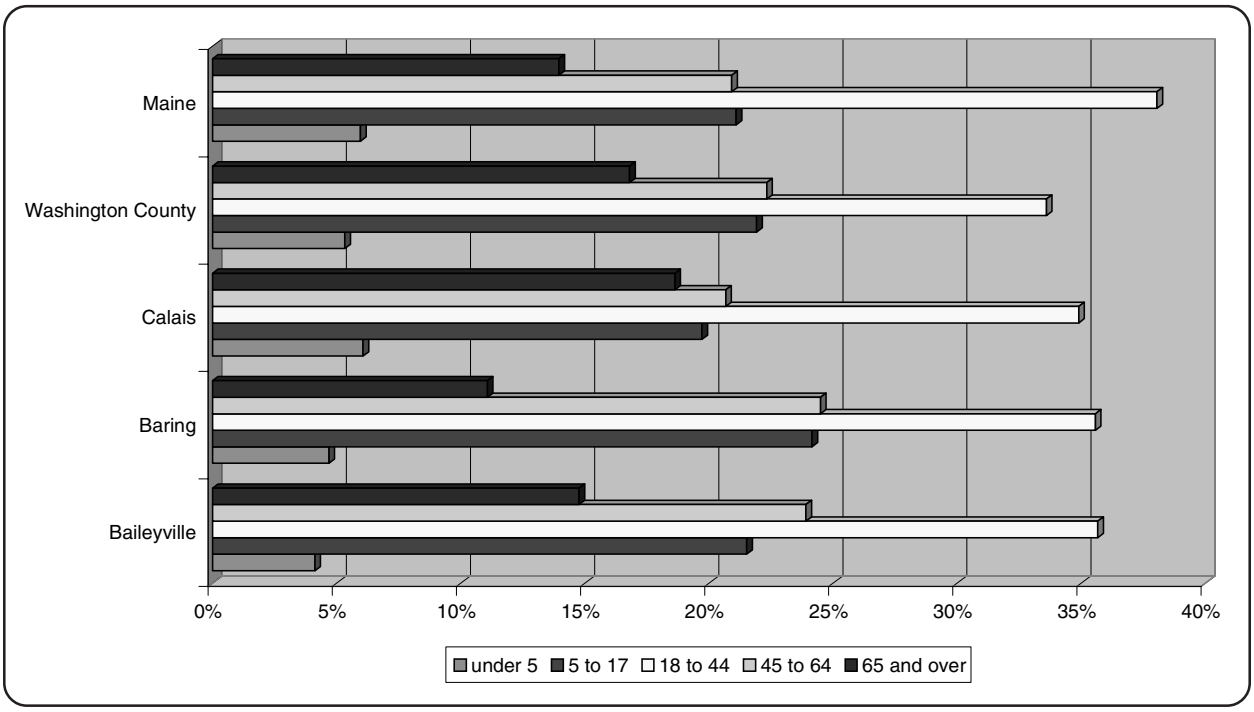


Source: U.S. Census & Maine State Planning Office, 2000.

(2) Age and Sex Distribution

The city and towns in the Study Area and Washington County have older populations than the State. A key factor, which can effect population growth and determine the type of services required, is the distribution of the total population according to the age of residents (Figure III-11, next page). Calais has the highest proportion of people over the age of 65 (752 persons or 18.6 percent); a number of these people reside at the senior citizen housing complexes or the assisted care facilities. The majority of the population within the three communities is between the ages of 18-44 (2,249 persons or 35 percent). People within this age group are most frequently engaged in forming new households and raising children. This age cohort is the basic segment of the population that comprises the local labor force and that most frequently engages in home buying or building. Nearly 52 percent (3,239 persons) of the population of the three communities in the Study Area is female (U.S. Census Bureau 2000). In Washington County, 50 percent of the population is female.

Figure III-11, Age Distribution



Source: U.S. Census, 1995

(3) Labor Force

More than half of the residents of Baileyville were in the labor force (persons age 16 and over who are working or actually seeking work) in 2000 (Table III-4). In contrast, approximately half the residents of Calais and Baring were in the labor force. In 2000, unemployment rates were substantially above state levels. The unemployment rates in Baileyville and Calais were particularly high compared to Baring, the County, and the State (Maine Department of Labor 2001).

Table III-4, Labor Force Characteristics 1998

Jurisdiction	Civilian Labor Force	Percent of Total Population in Labor Force	Percent of Labor Force Unemployed (Persons)
Baileyville	969	51.5%	10.3% (100)
Baring	137	50.2%	5.8% (8)
Calais	1,657	48.1%	9.2% (153)
Washington County	16,630	50.1%	7.8% (1,290)
Maine	668,800	52.5%	3.5% (24,200)

Source: Maine Department of Labor, 2001

b. Community Characteristics and Conditions

(1) Education

The statewide levels of educational attainment are substantially higher than the levels of Washington County, Calais, Baring, and Baileyville (U.S. Census Bureau 1990). The high school diploma/equivalency rate is substantially lower in Baring and slightly lower in Calais and Baileyville than the State level. The percentage of people with college and professional degrees is much lower in Washington County and in the Study Area than the State (Table III-5).

Table III-5, Educational Attainment[1]

Jurisdiction	High School Diploma/ Equivalency (Persons)	Bachelor/ Associate Degree (Persons)	Graduate/ Professional Degree (Persons)
Baileyville	78% (1,031)	15% (182)	1% (14)
Baring	65% (106)	10% (15)	1% (2)
Calais	77% (1,873)	15% (400)	5% (127)
Washington County	73% (16,895)	18% (3,123)	4% (933)
Maine	79% (627,153)	26% (155,716)	6% (48,564)

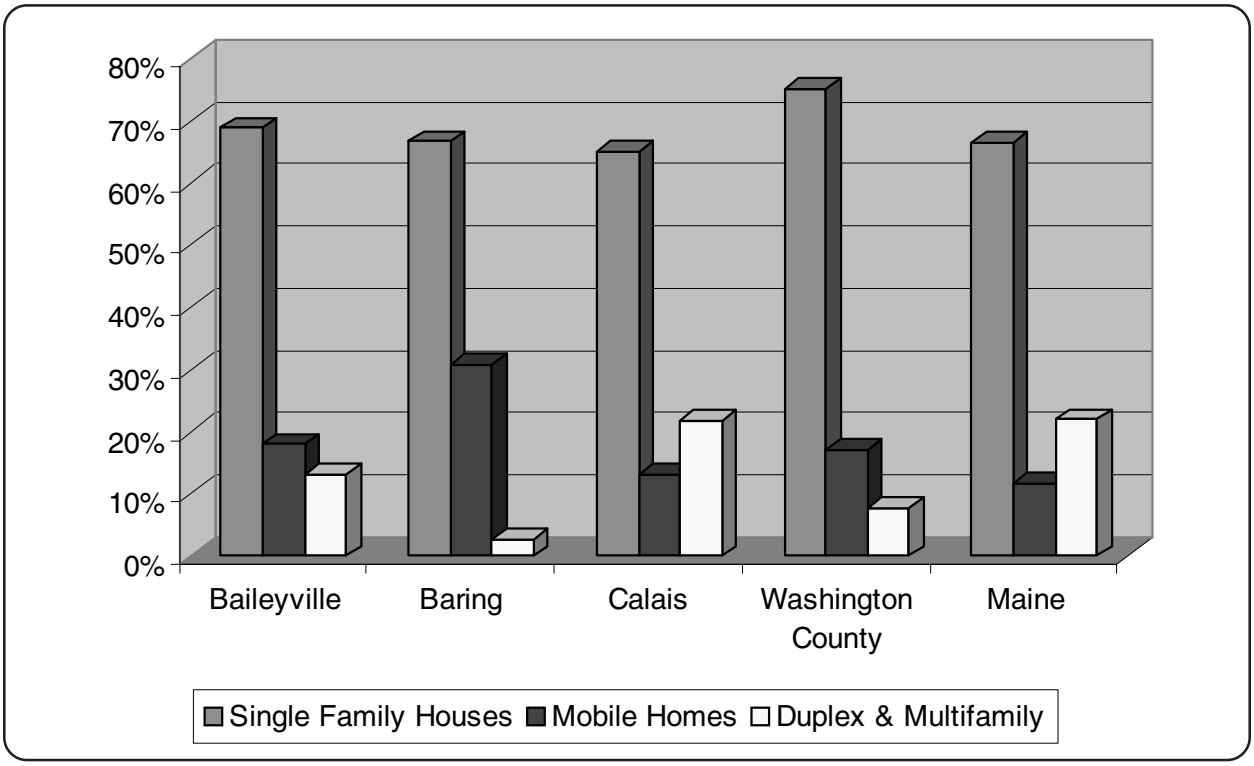
[1]*Persons 25 years and older*
Source: U.S. Census Bureau, 1990

(2) Housing

There is a wide range of housing types within the Study Area. Single-family dwellings are predominant throughout the Study Area (1,849 of 2,786 homes) (Figure III-12, next page). Multi-family housing, including a number of government subsidized elderly and low income housing complexes, is located almost exclusively within the urban areas of Calais. There are substantially higher proportions of mobile homes in Washington County (3,254 of 19,124 homes or 17.0 percent) and the Study Area communities (432 or 2,786 or 15.5 percent) than the State (68,019 of 587,045 homes or 11.6 percent) as a whole (U.S. Census Bureau 1990).

Median housing values within the Study Area ($50,900) and Washington County ($53,100) are substantially less than statewide values ($87,400). Calais has a substantially higher proportion of renter occupied housing units (31.3 percent) than Baileyville (19.7 percent), Baring (10.4 percent), the County (21.2 percent), or the State (29.5 percent). The median contract rents for Washington County ($227/month), Baileyville ($286/month), and Calais ($261/month) are substantially less the statewide median contract rent ($358/month). The median contract rent in Baring ($331/month) is slightly below the statewide median (U.S. Census Bureau 1990).

Figure III-12, Housing Unit by Type of Structure



Source: U.S. Census Bureau, 1990

(3) Employment, Income and Taxes

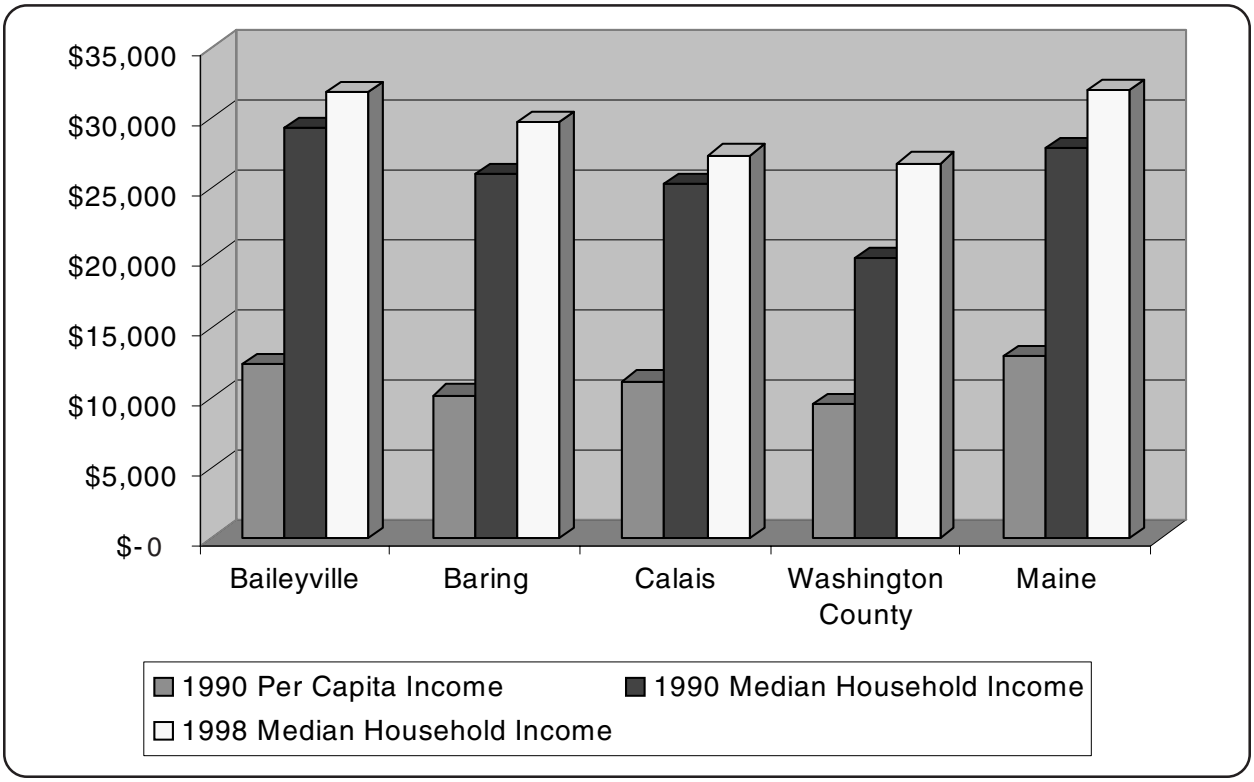
(a) Income

1990 per capita and 1998 median household income levels within Baring ($10,198 and $29,688) and Calais ($11,211 and $27,373) are less than the State levels ($12,957 and $31,952) (Figure III-13, next page). Baring's per capita income is 21.3 percent lower than the State, and Calais's is 13.5 percent lower. Baring's 1998 median household income is 7.0 percent lower than the State and Calais's is 14.3 percent lower. Baileyville incomes ($12,429 and $31,842) are higher than Calais and Baring income levels, perhaps in part due to employment at the Domtar Paper Mill. Washington County 1990 per capita and 1998 median household incomes ($9,607 and $27,373) are substantially less (26 percent) than the State levels (Maine Department of Education 1998).

Total personal income for Washington County in 1997 was $605,711,000 (Maine Department of Labor 2001).

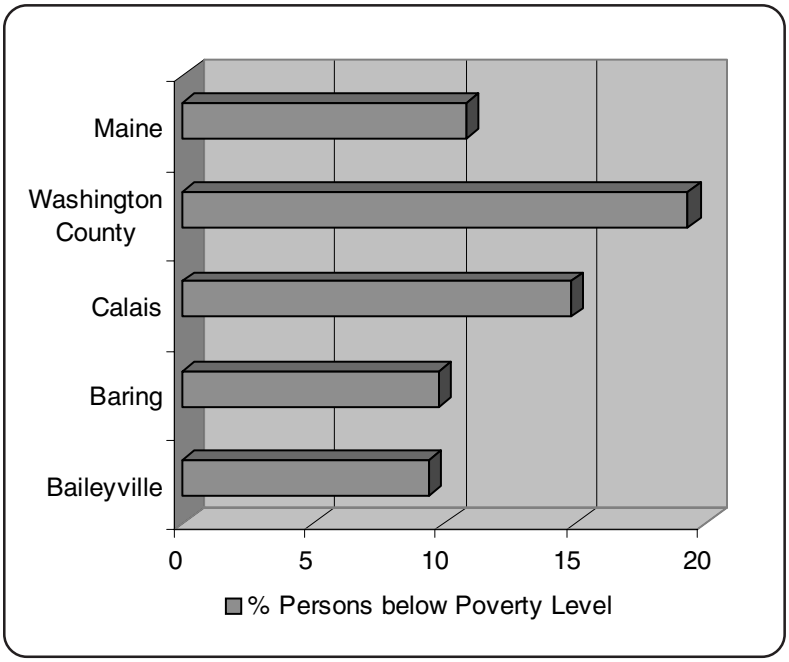
The percentage of the population living below the poverty level is substantially higher for Washington County (19.3 percent) and Calais (14.8 percent), than for Baring (9.8 percent), Baileyville (9.4 percent), or the State (10.8 percent) (Figure III-14, next page) (Maine Department of Education 1998).

Figure III-13, Income Levels



Source: 1998 data from Maine Department of Education
Note: Median Household income for Washington County is a 1997 Figure

Figure III-14, Income Below Poverty



Source: 1998 data from Maine Department of Education

(b) Retail Customers and Businesses

i) Through Travelers

A literature review of bypassed communities was compiled that examined studies conducted by the National Cooperative Highway Research Program (NCHRP), the University of Kansas, Washington State University, and both the Wisconsin and Iowa Departments of Transportation. The review investigated more than 270 bypassed communities with varying size, demographic, and economic characteristics. Data collected for the studies ranged from interviews about local opinions, to origin-destination surveys, to statistical analysis and economic impact modeling. Below is a summary of the major conclusions with relevance to the Calais-St. Stephen area (MDOT Literature Review 2000).

Bypasses can result in decreased business for some local businesses, particularly traveler-oriented businesses, and particularly in communities with populations under 1,000. Adverse effects do not occur in a majority of traveler-oriented businesses; sales at traffic-serving businesses along the bypassed route declined in less than 30 percent of cases studied (NCHRP 1996).

In 64 percent of cases studied (173 cases), overall business activity grows more rapidly where bypasses have been constructed than in comparable "control" communities that are not bypassed (NCHRP 1996). Some of this growth may be a reason for construction of the bypass, rather than an effect of the bypass.

In almost all of 17 cases studied in Wisconsin, the combined traffic on the original and new routes showed growth trends well above the average for the State and for the comparable control group (Wisconsin DOT 1998). Some of this growth may be a reason for construction of the bypass, rather than an effect of the bypass. In most of the cases in Wisconsin for medium (2,000-2,500 people) to larger (over 5,000 people) communities, traffic on the original (bypassed) route is greater than traffic on the bypass (Wisconsin DOT 1998).

In nearly all of the communities studied by NCHRP, the amount of land in commercial or industrial use increased along both existing routes (93 of 98 cases) and new bypasses (11 of 13 cases) (NCHRP 1996).

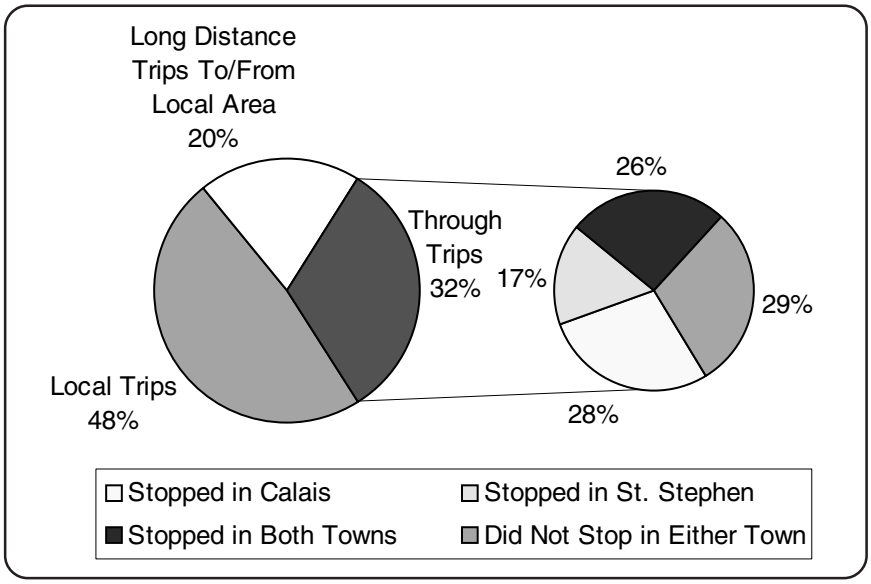
Land values were found to increase along the new bypass in all 68 of the cases reviewed by NCHRP. Land values were found to increase along the original route in 47 of 50 cases studied by NCHRP. The rates of decline were no greater than 2.4 percent for the remaining three cases (NCHRP 1996).

In the 17 Wisconsin towns studied, less than five percent of retail, lodging, and amusement businesses in bypassed communities were located within one-half mile of a bypass interchange or intersection. Many traffic-oriented businesses built after bypass construction were located inside the communities rather than near the bypass. The vast majority of retail businesses had not moved from their pre-bypass locations (Wisconsin DOT 1998).

The origin-destination survey conducted by MDOT on August 25, 1999 revealed that 48 percent (618 respondents) of trips across the border were local trips

(Figure III-15). Another 20 percent (257 respondents) of trips were long distance trips either to or from the local area, and 32 percent (399 respondents) indicated they were making long distance through trips. Almost half of these through trips (15 percent of all trips) were made by commercial vehicles (Figure III-15).

Figure III-15, Trips Across the Ferry Point Bridge



Of the 399 respondents making through trips, 217 respondents stopped in Calais. This represents 54 percent of the through trips and 17 percent of total traffic through the Ferry Point Crossing.

The 1999 and 2030 daily peak season traffic volumes for the No-build Alternative using the Ferry Point Crossing are forecast to be approximately 6,698 and 10,391 vehicles, respectively (see Section I-B-2-c — Traffic Congestion). Assuming 32 percent of the traffic (2,143 vehicles) using the Ferry Point Crossing is through traffic, and 46 percent of this through traffic does not stop in Calais, it is estimated that in 1999, approximately 986 vehicles crossed the Ferry Point and Milltown Border Crossings daily, and did not stop in Calais. It is estimated that in 2030, approximately 1530 vehicles would cross the Ferry Point and Milltown Border Crossings daily and not stop in Calais.

ii) Retail customers

Customer intercept surveys were conducted from August 21-24, 2000; 306 surveys were completed. Customers were surveyed at six businesses: Hardwicke's Country Store/Exxon, McDonald's Restaurant, Knock on Wood, Marden's Surplus and Salvage, Bag End Emporium, and Bernardini's Restaurant. Each business was surveyed for a four-hour period. The survey team chose times of day that represented usual peaks in customer traffic for each type of business.

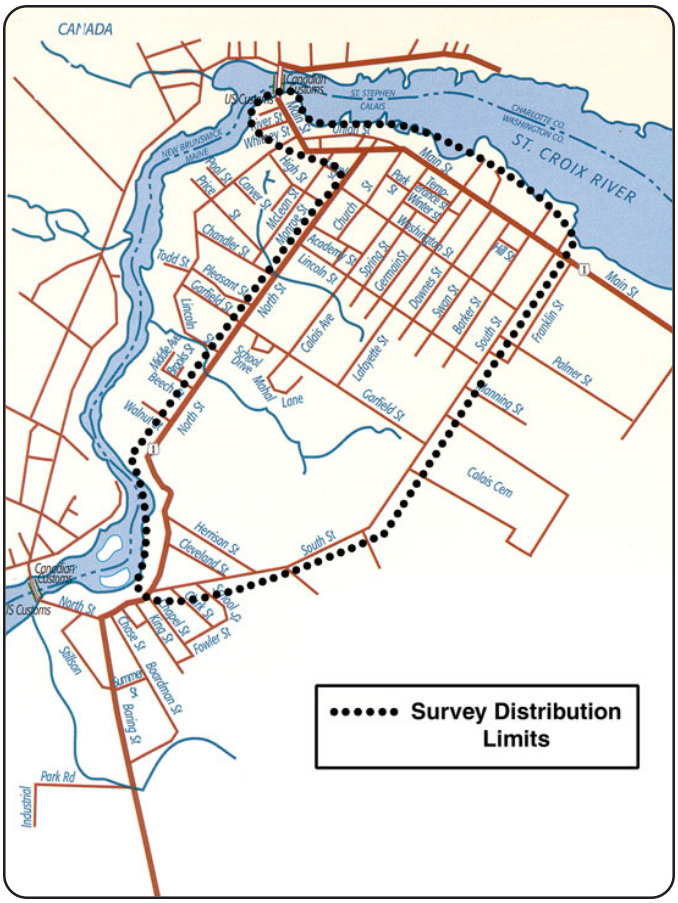
Rite-Aid, Wal-Mart, Payless Shoes, and Fashion Bug were approached for permission to interview customers. The survey team either did not receive permission to survey at these locations, or did not receive a response after repeated attempts to contact managers at these businesses by telephone.

The survey consisted of ten questions. The survey was administered by the study team in an interview style. Responses were recorded on individual survey forms.

iii) Retail Businesses

The survey team distributed 57 business surveys to retail businesses in Calais during the week of August 21-24, 2000. The surveys were hand delivered to retail businesses (Figure III-16); 22 surveys were completed and returned.

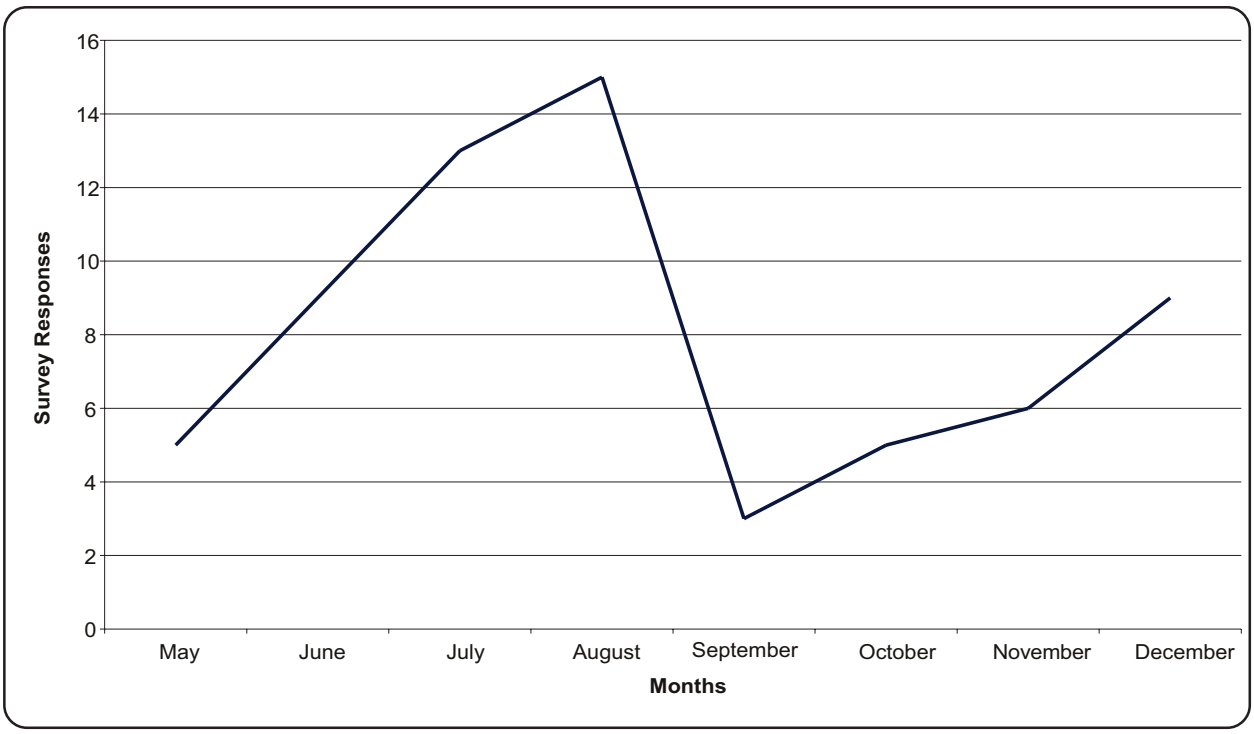
Figure III-16, Business Survey Distribution



No respondent listed any month between January and April as a peak sales time (Figure III-17, next page). Calais business owners consider the summer months the highest peak sales time. Retail sales decrease in the fall, and increase again around December. The December sales peak is most likely a result of the holiday shopping season. The sales peaks during June, July and August suggest that summer tourism traffic is an important source of revenue to Calais businesses.

Over the last five years, 68% (15 businesses) of businesses reported a decrease in sales. However, 76 percent of business owners predicted an increase in sales at their business, excluding possible impacts from a new border crossing. Seventy-nine percent of business owners felt that traffic congestion was not a problem for customers trying to access their business. The four business owners who felt that traffic congestion was a problem for customers trying to access their business (Boston Shoe Store, Kendall's Fine Jewelers, My Favorite Things, and Hardwicke's Country Store/ Exxon) are located on Main Street in downtown Calais.

Figure III-17, Seasonal Sales Peaks for Calais Businesses (months)



As reported by Calais Business owners in August 2000 business survey.

The Calais Regional Chamber of Commerce (CRCOC) distributed a business survey on July 12, 2000 similar to the MDOT business survey. The results of the CRCOC survey are similar to the MDOT business survey results.

(c) Employment and Retail Sector

From 1985 to 1999, the unemployment rate has fluctuated (Table III-6, next page). The average unemployment rate during the 1990s was approximately two percent higher than the average unemployment rate for the period 1985-1990. Unemployment peaked at 12.9 percent in 1997, and has fallen since then to 9.2 percent in 2000 (Maine Department of Labor 2001).

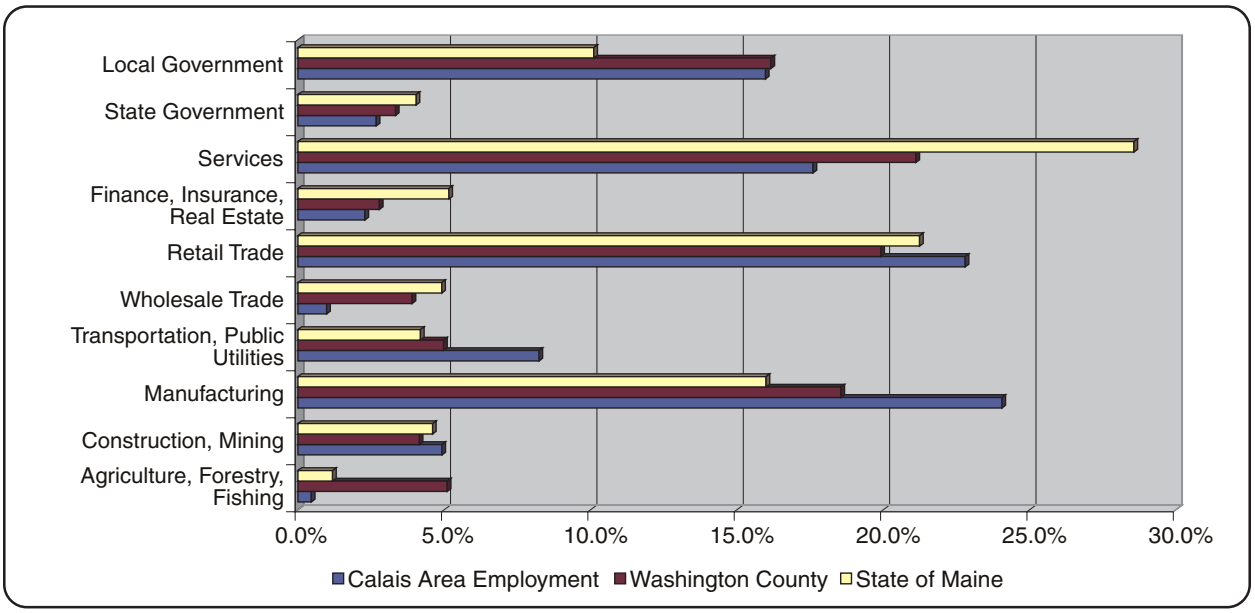
A substantially higher proportion of people are employed in manufacturing in the Calais area labor market as compared to the County or the State (Figure III-18, next page). Employment in retail trade (22.8 percent or 996 persons) and, to a lesser extent services (17.6 percent or 769 persons) and local government (16.0 percent or 698 persons), are also substantial in the Calais area labor market (Maine Department of Labor 1998).

Table III-6, Employment and Unemployment in Calais, 1985-2000

	Civilian Labor Force	Employment	Unemployment	Unemployment Rate (%)
1985	1,736	1,595	141	8.1
1986	1,668	1,524	144	8.6
1987	1,764	1,619	145	8.2
1988	1,753	1,595	158	9.0
1989	1,796	1,667	129	7.2
1990	1,848	1,739	109	5.9
1991	1,931	1,781	150	7.8
1992	1,924	1,770	154	8.0
1993	1,895	1,668	227	12.0
1994	1,784	1,585	199	11.2
1995	1,797	1,617	180	10.0
1996	1,771	1,598	173	9.8
1997	1,777	1,548	229	12.9
1998	1,646	1,496	150	9.1
1999	1,698	1,548	150	8.8
2000	1,657	1,504	153	9.2

Source: Maine Department of Labor, 2000

Figure III-18, Labor Force Characteristics



Source: Maine Department of Labor, 1998

The Domtar pulp and paper mill in Baileyville employs about 900 people (Access Strategic Knowledge, 1998). Other major employers in the region are the Charlotte County and Calais Regional hospitals, the St. Stephen School Department and Flakeboard Co., Ltd. plant in St. Stephen, New Brunswick (Table III-7).

Table III-7, Regional Major Employers

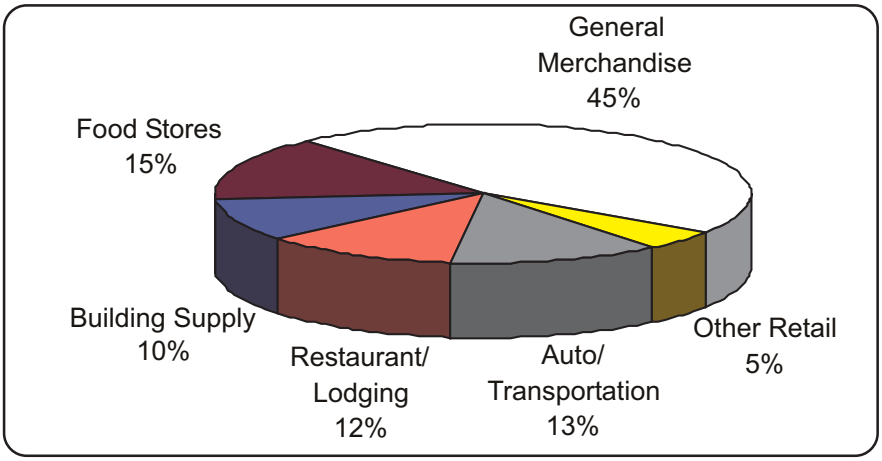
Employer	Location	No. of Employees
Domtar	Baileyville	900
Charlotte County Hospital	St. Stephen	250
St. Stephen School Dept.	St. Stephen	250
Calais Regional Hospital	Calais	235
Flakeboard Co., Ltd.	St. Stephen	200
Thomas DiCenzo, Inc.	Calais	170
Wal-Mart	Calais	150
Connor's Brothers	Eastport	150
Ganong Bros., Ltd.	St. Stephen	140
Calais School Dept.	Calais	120
Atlantic Rehab. and Nursing	Calais	90
Fiber Extrusion	Eastport	73
Washington Cty. Tech. College	Calais	66
Shop n' Save	Calais	65
Marden's Surplus and Salvage[2]	Calais	50

Source: Access Strategic Knowledge, 1998
[2] Employment information from MDOT Business Survey, 2000.

Calais is the eighth busiest port of entry to the United States on the Canadian border. The city serves as a regional shopping and service center for Washington County. In 1998, general merchandise, such as sales of clothing, furniture, televisions, home furnishings and household durable goods accounted for 45 percent ($32.6 million) of taxable consumer sales for the Calais area labor market (Figure III-19, next page). Total taxable consumer sales in 1998 were $71.4 million. Consumer sales in the categories of food store, auto/transportation, restaurants/lodging and building supply, were 15 percent ($10.6 million), 13 percent ($9.1 million), 12 percent ($8.6 million), and 10 percent ($7.2 million), respectively (Maine Revenue Services 1998).

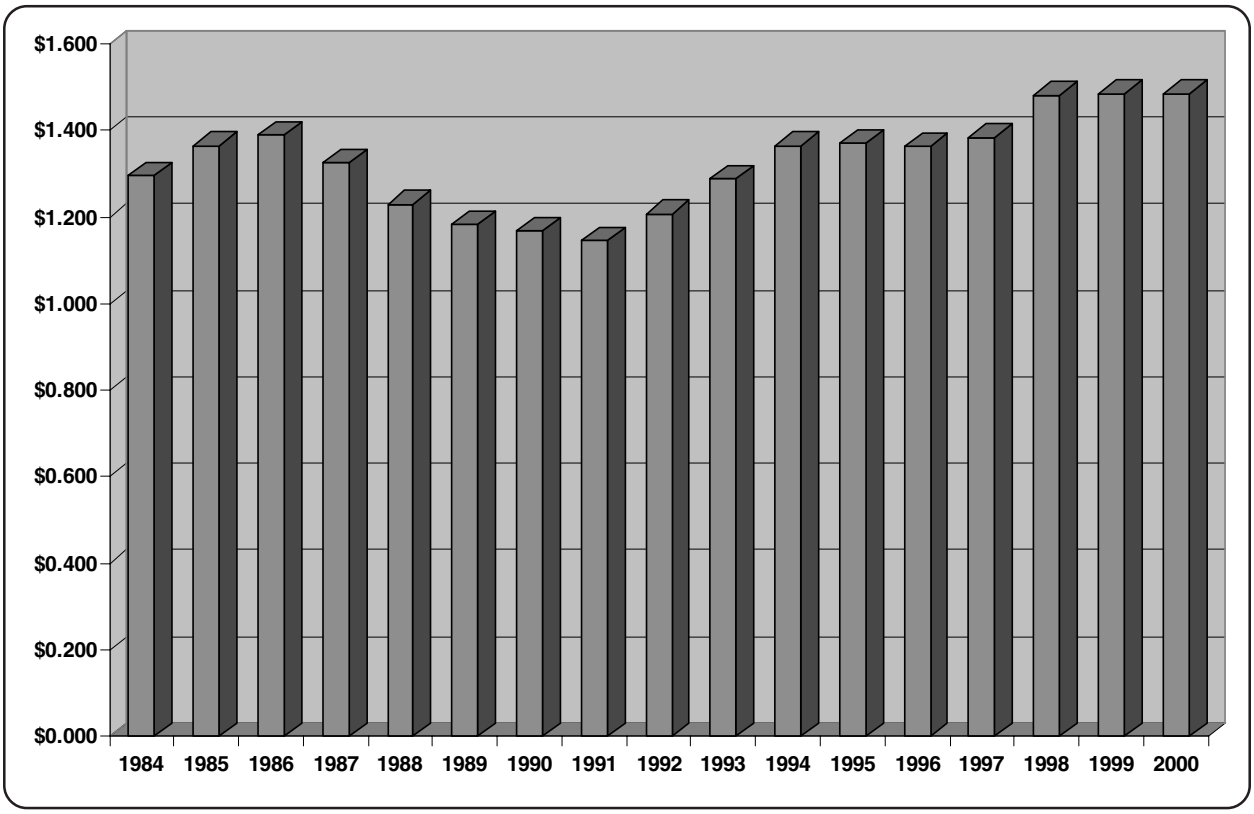
From 1984 to 2000, the United States dollar has consistently been stronger than the Canadian dollar. The value of the U.S. dollar rose relative to the Canadian dollar during the early 1980s, and fell in the late 1980s. During the 1990s, the value of the U.S. dollar rose again, and in 1999 and 2000, was at its highest level in 20 years (Pacific Exchange Rate Service 2000) (Figure III-20, next page).

Figure III-19, Taxable Retail Sales By Group, 1998



Source: Maine Revenue Services, 1998

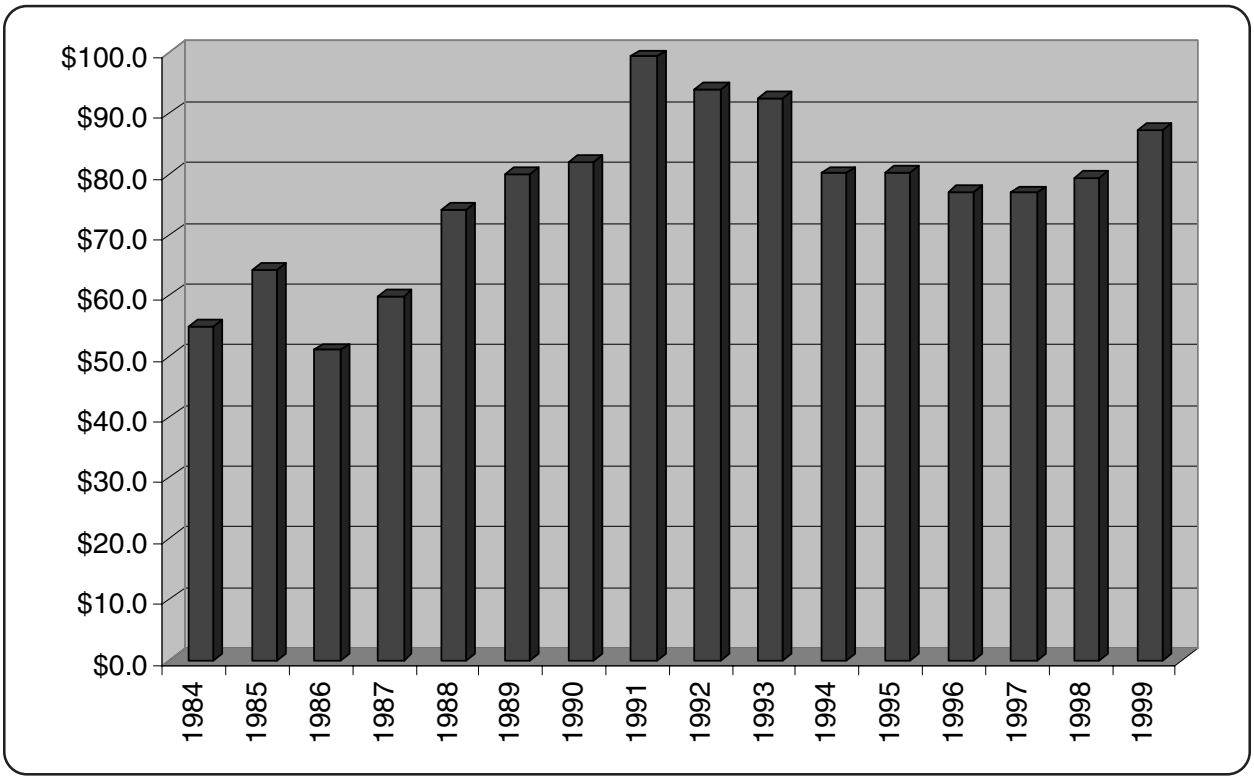
Figure III-20, Canada/U.S. Currency Exchange Rate, 1984-2000



Source: Pacific Exchange Rate Service, 2000

Taxable consumer retail sales for the Calais area peaked during the early 1990s when the U.S./Canada exchange rate was most favorable for Canadians to shop in Calais (Figure III-21, next page) (Maine Revenue Services 1998). The 1999 and 2000 average annual exchange rate, 1.485 CAD/USD, means a United States dollar

Figure III-21, Calais Area Taxable Retail Sales, 1984-1999 ($ millions)



Source: Calais Regional Chamber of Commerce, 2000
Note: Calais area is: Alexander, Baileyvile, Baring Plantation, Brookton Twp., Calais, Charlotte, Codyville, Crawford, Cooper, Forest Twp., Grand Lake Stream, Lambert Lake, Meddybemps, #21 Plantation, Princeton, Robbinston, Talmadge, Topsfield, Vanceboro, and Waite

was worth $1.49 ($0.67 CAD) on average in Canada during 1999 and 2000. This exchange rate does not give Canadian consumers a financial incentive to purchase goods in the U.S.

Other factors besides the exchange rate may affect consumer-purchasing decisions. Not all goods are similarly priced in both countries. For example, despite the exchange rate, gasoline is less expensive in the U.S. than in Canada because Canadian gasoline taxes are approximately twice as high as U.S. gasoline taxes.

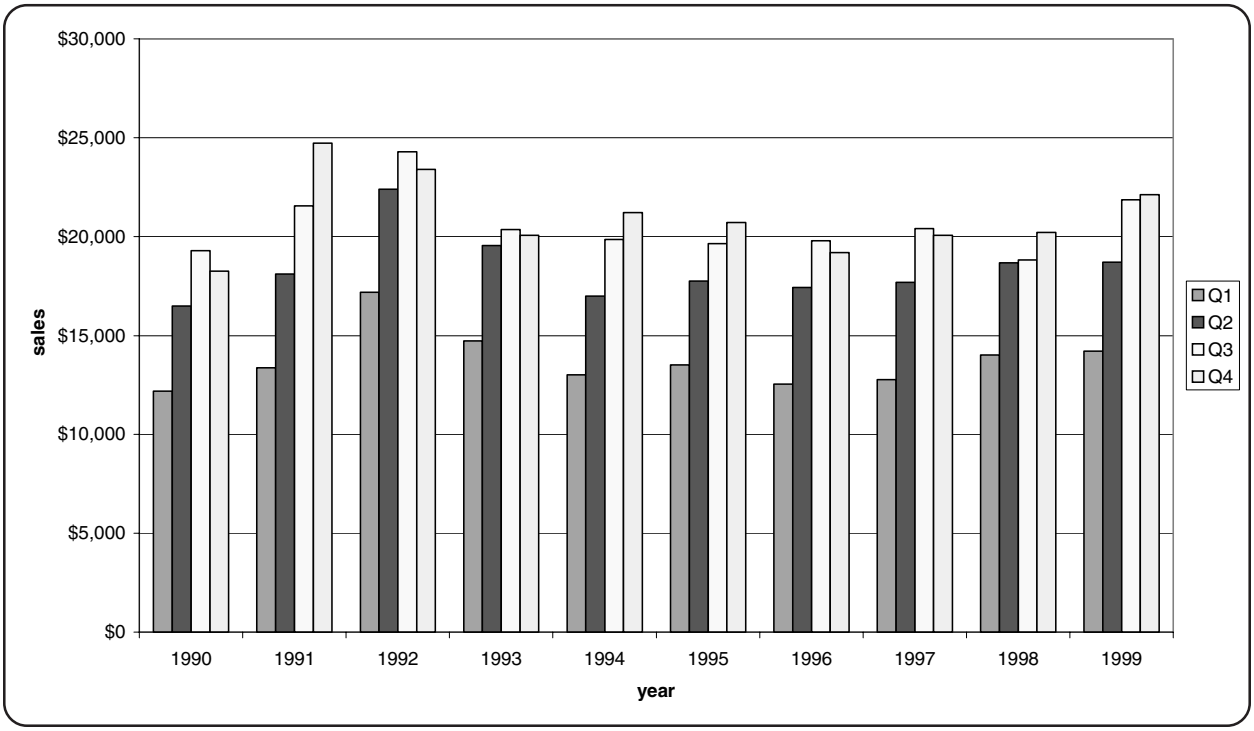
Canadian sales tax laws have been revised during the last decade affecting consumer purchasing. A national goods and services tax (GST) of 7 percent was instituted on January 1, 1991. On April 1, 1997, three provinces – New Brunswick, Nova Scotia and Newfoundland – harmonized their provincial sales tax rates with the national rate. Residents of the three provinces now pay a 15 percent harmonized sales tax (HST) on goods purchased in the United States (for an absence of 24 to 48 hours, a $50 exemption exists). The HST makes it less attractive for Canadian residents to purchase goods in the United States (Canada Customs and Revenue Agency 2001).

In addition, statistical analysis of 1991-2000 traffic and retail sales data for Calais shows that retail sales are correlated to traffic levels. Non-commercial, cross-border

traffic is forecasted to grow at an uncompounded annual rate of 1.5 percent through the year 2030 (see Section I-B-2-c — Traffic Congestion). Although other factors are involved in predicting retail sales growth, an increase in traffic in the Study Area and region should have a positive impact on Calais retail sales.

In the customer survey, the majority of retail business owners reported that sales were highest during the third quarter (July through September). For taxable consumer sales in the last 10 years, third quarter sales have been high while sales in the fourth quarter (October through December) have been nearly equal to or greater than third quarter sales (Figure III-22). This suggests that while Calais may be somewhat dependent on summer tourism traffic, a strong local base of customers exists as well. Figures III-23 (next page) and III-24 (next page) show quarterly sales at restaurants and lodging establishments. In all cases in these sectors, third quarter sales are substantially higher than any other time of the year. This suggests that the restaurant and clothing sectors of the retail economy are more dependent on summer tourism traffic than others (gasoline station sales were not available).

Figure III-22, Calais Area Quarterly Sales (Taxable Consumer Sales)

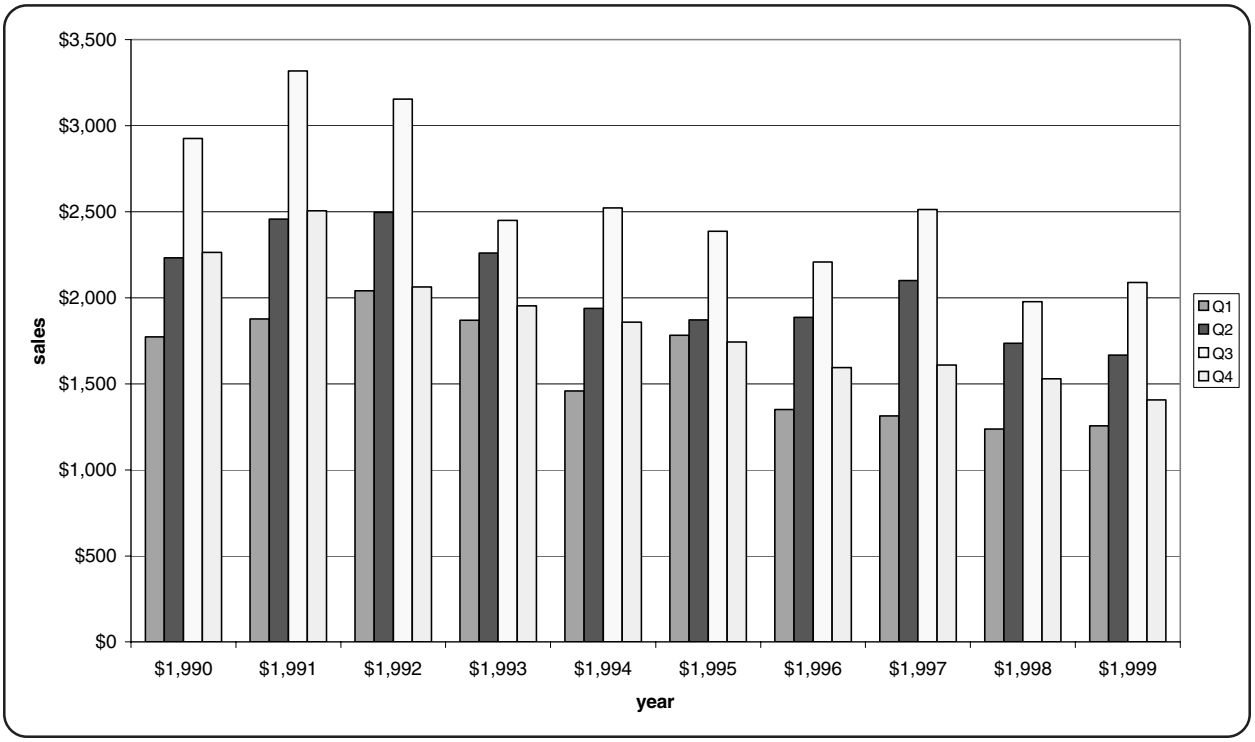


Source: Calais Regional Chamber of Commerce, 2000

i) Traveler-oriented businesses

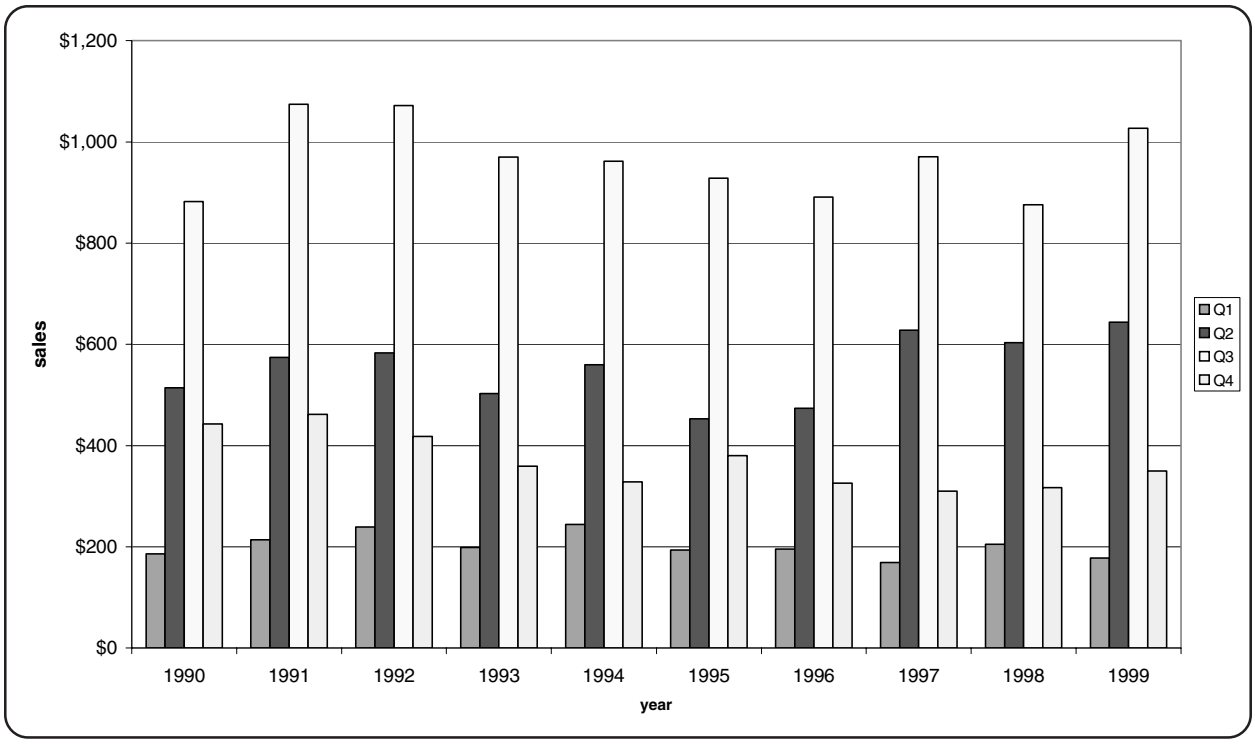
According to 1997 U.S. Census Bureau data and the Calais Tax Assessor's office, there are 78 retail, accommodations and food-services businesses in Calais (Table III-8, page III-42).

Figure III-23, Calais Area Quarterly Sales (Restaurants)



Source: Calais Regional Chamber of Commerce, 2000

Figure III-24, Calais Area Quarterly Sales (Lodging)



Source: Calais Regional Chamber of Commerce, 2000

Certain Calais businesses, including fast food restaurants and gas station-convenience stores, are identified as "traveler-oriented." Such businesses are the types that pass-through travelers are most likely to patronize, however, they do not necessarily have a majority of their sales to pass-through travelers.

ii) Traffic-dependent businesses

A number of other businesses in Calais that are not "traveler-oriented" identify themselves as traffic-dependent. These businesses believe their visibility along Route 1 is a vital form of advertising, generating greater awareness of their store.

iii) General Merchandise Sector

A variety of other retail businesses in Calais, including general merchandise businesses, are not regarded as dependent on pass-through traffic. These businesses primarily cater to people living in the vicinity or visiting town for another purpose such as school or work.

Table III-8, Retail Business Categories and Number of Establishments, 1997

Business Category	No. of Establishments
Accommodations	6
Pizza Shop	3
Fast Food	6
Tavern	2
Restaurant	9
Motor vehicles and parts dealers	9
Furniture/home furnishings	3
Electronics/appliances	2
Building supplies/garden equip.	6
Food and beverage	6
Health/personal care	3
Gasoline stations	9
Clothing/accessories	6
Sporting goods/hobby/book/music	4
General merchandise	4
Total	78

Source: U.S. Census Bureau, 1997 and Calais Tax Collector's Office, 2000

[1]For this study, accommodations and foodservices are included in retail sector. Miscellaneous, non-store retailers and direct selling establishments not included.

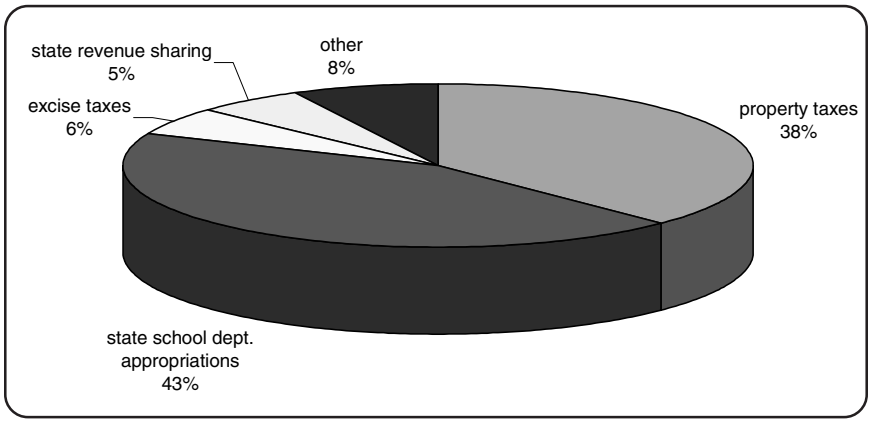
iv) Accommodations Sector

According to the U.S. Census Bureau and the Calais Tax Assessor's Office, there are six accommodations businesses in Calais.

(d) Property Tax Revenue

Total revenues collected in 2000 in Calais are projected to be approximately $7.92 million dollars. Of this total, property tax revenues are projected to be approximately $2.97 million dollars. The Calais City Tax Assessor estimated that 34 percent of property tax revenues ($1.0 million) are derived from commercial/non-residential uses. The remaining 66 percent of revenues ($2.0 million) come from residential properties. Excise taxes, state revenue sharing, and school department appropriations from the State are the other major revenue items in the city budget (Figure III-25 next page).

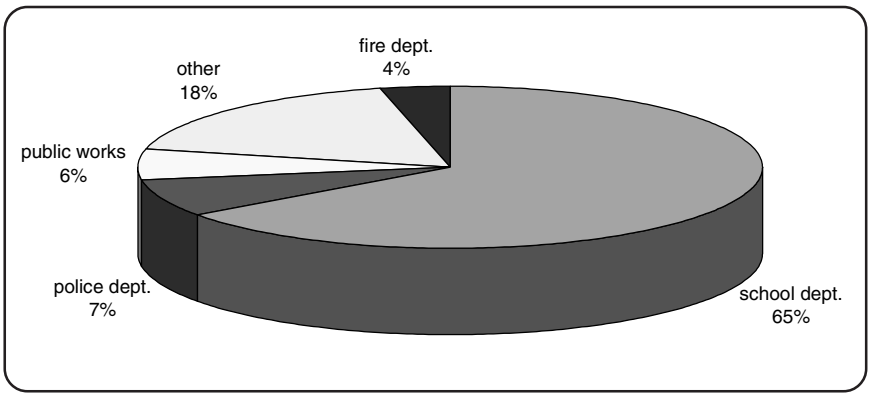
Figure III-25, Calais Revenue Summary, 2000-01



Source: Calais City Tax Assessor, 2000

The school department is the major expenditure for the city; approximately $5.13 million dollars or 65.0 percent of total expenditures went to schools in 2000 (Figure III-26). Other major expenditures are the police department ($0.58 million dollars or 7.0 percent of total expenditures) and the public works department ($0.49 million dollars or 6.0 precent of total expenditures) (Calais Tax Assesser, 2000).

Figure III-26, Calais Budget Expenditures, 2000-01



Source: Calais City Tax Assessor, 2000

6. Minority and Disadvantaged Populations

Environmental Justice is defined by the U.S. EPA's Office of Environmental Justice (EPA 1997) as ". . . the fair and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."

Racially, the Study Area is not diverse; approximately one percent of the population was non-white in 2000. No concentrated populations of minorities are known to reside in the Study Area (U.S. Census Bureau 2001).

The number of residents in Calais living below the poverty level is higher than the state average and teh number of residents of Baileyville and Barring living below the poverty level is slightly below the state average. No concentrations of economically disadvantaged populations are known to exist within the Study Area.